



CONTRACTUAL CLAIMS TOOLS, TECHNIQUES & ALTERNATIVES

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Foreword

Our project and personal lives are often characterized by ambiguity, misunderstandings, uncertainty and disputes. Since these environments are unavoidable, everyone should be properly trained on how to avoid them in the first place and how to handle them just in case they cannot be avoided.

It is the purpose of this references book on contractual claims to provide the business environment with tools and procedures to handle all kind of dispute situations regardless of its timing during the project/business life cycle.

There is no substitute for good project management, administration discipline and the use of tested standards and procedures to have a peace of mind when confronted with disputes because in the worst case scenario, reconstruction of the facts will produce a picture of the situation at hand that will be helpful to mediate, reconcile and ultimately settle.

Within the management of disputes paradigm, planning and scheduling is the key organizational skill while dealing with contractual claims since their professional practice will allow dispute participants to speculate with all the parameters related to the case as long as certain rules and procedures are agreed in anticipation.

Accordingly, Generally accepted scheduling principles (GASP) and Planning and scheduling excellence guidelines (PASEG) have to be given special consideration at all stages.

The amount of data created by projects is often overwhelming and its analysis requires a disciplined mind coupled with serious professional administrative skills just to set it together in an appropriate fashion that would allow decision makers do their job.

While modern systems and procedures explained in this book might help with the elimination of some subjectivity inherent on the actual cases analysis, it should be kept in mind that only by establishing parties' consensus on a set of rules to be followed during workouts and negotiations will result on positive gain.

A great contribution to contractual disputes resolution has been brought by the international chamber of commerce (ICC), the London court of international arbitration (LCIA), the society of construction law (SCL) and the United Nations commission on international trade law (UNCITRAL).

Practices such as the disputes resolution board (DRB) and partnering are also presented as alternative solutions at the front-end of business.

Furthermore, the latest trends on contractual claims are depicted to benefit the knowledge base of the development communities.

Introduction to the Projects Environment

Design modifications, variation orders, delays, misinterpretations, substitutions of comparable materials, and changed site conditions are among an almost infinite list of events hanging around our projects ready to take us for a ride on disputes, forensic engineering and endless negotiations.

Fortunately enough, project managers can now count on a series of well-engineered management tools to prevent undesirable situations becoming a project disruption, a dispute, and most likely a claim.

Unlike in the past, these management tools are now being applied right from the inception of the project creating a parallel dimension during the project life cycle to protect us against damaging and usually costly constraints.

The real novelty on this matter is that of practicing full project management at earlier stages of development and integrating tools usually given low priorities by project team members.

Disputes and claims can definitively be avoided. There is no reason to think otherwise when we have excellent tools such as:

- Project Life Cycle Analysis;
- Constructability;
- Value Engineering Analysis;
- Critical Path Method;
- Just in Time Procurement;
- Modern Contracting Administrative Strategies; and
- A good cost and schedule control system criteria.

Although these tools have been available to all us for quite a long time, they have never been successfully applied to project management due to conventional management wrong belief requiring them to be used only on limited basis at later stages of the project life cycle.

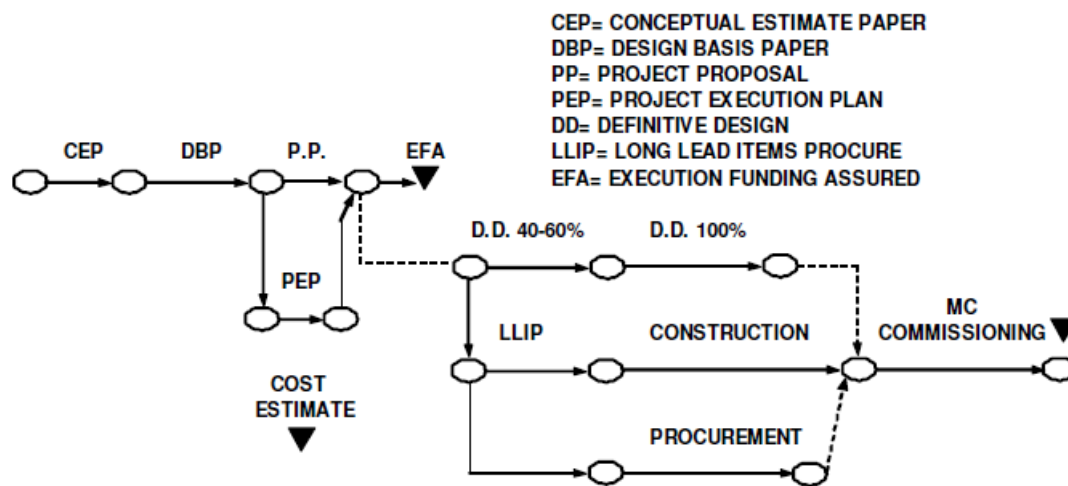
Modern project management is not only integrating these tools in all the stages of the project life cycle, but it is emphasizing their priority as decision-making tools and indispensable requirements to guarantee accomplishment of targets and disputes prevention.

Project Life Cycle

The project life cycle of a project may be the most important tool for visualization of appropriate project management tools utilization in order to avoid unbecoming situations normally ending up in unresolved disputes, arbitration or plain claims.

The figure below shows a typical summary schedule network depicting the main activities involved in a typical project life cycle.

When a project is proposed a very elementary procedure based on personal experience, historical data, project analogy, incipient design or a combination of them is set on the table in the form of a package usually called Conceptual Estimate Scoping Paper. (CESP)



The conceptual estimate paper should be more than a description of the project in question. It should be an incipient engineering study required as part of the initiation review package before a budget item is incorporated into the company's business plan.

The CESP should contain as a minimum, the following kind of information:

- Purpose of the proposed project;
- Description of the project;
- Conceptual Constructability Analysis;
- Conceptual Procurement Strategy;
- First CPM schedule for the project main activities(duration estimate); and
- An Order of magnitude cost estimate.

The CESP gives management a first rough idea about the size of the project, its financial commitment and timing for the execution. This document is developed in-house by the interested party and it usually is inexpensive and fast, but at the same time its accuracy is limited. It really serves as a basis to proceed to further development when circumstances permit.

Once the CESP is approved, additional activity is generated by starting a deeper engineering study which in time will be the baseline to develop a project proposal for expenditure approval. This engineering study along with other related information outlines is called the design basis paper (DBSP).

The DBSP clearly defines the project scope and supports the technical development of the project proposal later on in the project life cycle. It also encourages completion of a planning study before a project team is given the responsibility for the item.

Although the DBSP makes emphasis on what has to be done rather than how it will be done, it should be given enough support to further work on constructability and procurement issues thereby minimizing the chances of construction problems during the implementation phase.

The design basis paper should incorporate:

- The purpose of the proposed project;
- The relationship of the project to existing plans;
- The description of the proposed project;
- Constructability update;
- Procurement strategy update;
- Preliminary cash flow implications;
- A review of the alternatives studied;
- An order of magnitude estimate (-40, +40 % accuracy); and
- An improved version of the original CPM.

If the DBSP is approved the cycle should continue with a selection of a contractor to proceed with a more elaborated design that will support a better cost and time estimate in order to seek funds for project implementation. This more elaborated design is usually called the project proposal and it usually provides the final design basis and scope of work for the proposed project.

This kind of approach to preliminary stages of the project life cycle will introduce a substantial amount of engineering creativity focus on better management and design definition to avoid confusion usually resulting in misunderstandings, disputes, and claims during subsequent phases of the project.

Constructability

As it is well-known, the objective of this engineering procedure is to make optimum use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives.

A common view of design guidelines involves only:

- Determining more efficient methods of construction after mobilization of field forces;
- Allowing construction personnel to review engineering documents periodically during the design phase;
- Assigning construction personnel to the engineering office during design; and
- A modularization of pre-assembly program.

In fact, each of these represents merely a part of the optimization process. Yet only through effective and timely integration of construction input into planning, design, and field operations will the potential benefits of optimization be achieved.

Planning/execution phases for a typical major industrial project involve conceptual engineering, detailed engineering, procurement, construction, and start up. Construction optimization analysis should begin during the conceptual stage, at the same time as operability, reliability and maintainability considerations surface.

It can then continue through the remaining phases. Planners must recognize that the payoff for optimization analysis is greatest in the earliest phases of a project, growing progressively less, but never ceasing, until the end of the project.

In modern engineering jargon this process of design optimization is called constructability and you better believe it, claims can be avoided by giving it a proper priority.

Value Engineering Analysis

Both the value engineering team and the project manager are seeking the same goal during a project, namely, increased efficiency and economy in achieving the desired operational objectives. Value engineering analysis should be part of every activity within the project life cycle in order to be effective as a disputes avoidance tool.

Value engineering (VE) seeks to improve the management capability of people and to promote progressive change by identifying and removing unnecessary cost and promoting quality. Saving money and at the same time providing better value and quality without disputes and claims is a concept that everyone should support at all times. It seems there are always reasons for projects to be developed as fast as possible consequentially limiting the amount of time available for the designer to look not only for more efficient alternatives, but to avoid future misunderstandings and disputes.

Relying on old solutions when changes are occurring around us is usually the safest route, except that the competition will rapidly surpass us with creativity to say the least. Experience sometimes loads us with honest wrong mistakes because we are not exposed to new developments changing the truth we believe in. Experience is always valuable, but when it comes with unbending habits that will keep sensible ideas away it may not be as worthy as initially thought.

Temporary changed circumstances may also be converted in perpetuation of obsolete requirements and one of the main evils of cost confusion and inflation. As creatures of habits that we are we build skills, response and speed in our job based on habits but then they turn against us when it comes to design which has nothing to do with habits.

Uncompromising, defensive attitudes may keep us away from reality and the new needed information. The need to please many people at the same time created by politics is another great factor for introducing poor value and consequently disagreement in our projects.

Finally, shortcuts taken to stay within schedule and budget often add to the unnecessary costs in a design. The design fee is a small percentage of the total cost of a project but its reduction influences the total life-cycle cost of the facility and makes the project vulnerable to arguments and claims.

Critical Path Method

Old-fashioned project management finds it useless to start a network plan until project definition is completed. Modern project management knows CPM is a tool for all occasions providing information and discipline not achieved by any other means.

CPM helps avoiding rows, disputes and claims because it gives us project managers:

- Estimates of time and resources required to accomplish the plans;
- A sequence of events and responsible personnel;
- Time-cost trade-offs for all activities involved;
- Resource allocation for all phases of the plan;
- Activity completion and cost compliance control;
- An organized, clear, concise way of documenting plans, programs start and completion dates and cost performance;
- Easy training and indoctrination of new management personnel; and
- A comprehensive, psychological communication resource to foster team togetherness and delineate responsibilities.

Just in Time Procurement (JIT)

JIT also called “continuous flow manufacturing” by IBM, “stockless production and repetitive manufacturing systems” by Hewlett-Packard, “management by sight” by General Electric, and “the Toyota production system” in Japan, and “lean manufacturing” by others in the USA, is one the most efficient tools to avoid disputes and claims on procurement delays.

JIT as a cost reducing and efficiency improving tool is the result finding out high levels of construction materials while implementing projects, which are frequently used to cover up construction problems. If working conditions in a construction project precludes working in a phase of the project, other phases of the project can be continued thanks to the availability of materials (work around practice).

The benefit of these high buffer inventories is the continued operation, thus reducing both equipment and worker downtime. Unfortunately, the benefits of reduced equipment and worker downtime seldom exceed the cost of maintaining materials stock in a project.

JIT has been called a system of enforced problem solving because nothing is left to chance. There should be no weak links in the operations chain. Quality improvement is achieved by increased focus on the design and workability of the project and by employee training to ensure that each operation is performed as specified. All the above will be accompanied by a cleaner less cluttered workplace which are motivators for employees’ productivity.

Although achieving JIT procurement requires a number of cooperative activities with suppliers, subcontractors, and other parties in the procurement string, the effort will be rewarded by the reduction of construction problems and progress in the claims prevention department.

Development of suppliers and improving supplier relationships should be required as the first steps to achieve results. Just imposing JIT deliveries on a vendor will not be sufficient to achieve it.

If necessary, purchasers should work closely to the supplier to help reduce costs finding mutually beneficial ways to achieve JIT delivery of goods.

Price should not be the only consideration in JIT purchasing. Performance factors such as delivery schedules, product quality, timely communication, mutual trust, and dependence are important in selecting and developing a long-term supplier and obtain the full rewards of a disciplined, formal system.

JIT operations are currently widely practiced by all progressive firms, but it needs to be nearly foolproof and failure-proof. A successful JIT system should be operative nearly all the time and achieving this requires a highly functional operating system with extensive backup systems and procedures.

Contracting Strategies

Avoiding possible disputes means making it essential that the administration and management of contracts results in a strategy for reducing risks, maximizing cost savings, minimizing misunderstandings, and improving economic return. These can only be achieved through effectively managing contract risks by developing tough but fair contract documents, engaging in creative negotiating practices, and employing outstanding communication skills.

The process of reaching a contract requires a specific sequence of steps. In taking these steps, the project manager should make a series of choices between priorities for project objectives, degrees of risk to be assumed by the contracting parties, control over project activities, and the cost of achieving selected goals.

This process should first be fully understood by the project manager, then be tempered by experience, and finally be expanded into the ability to reach a contract through the exercise of negotiating and communicating skills. While developing a contract strategy for the project, the following considerations should lead the process to successfully accomplish the forecasted targets:

- Division of work;
- Type of contract or contracts to be used;
- Definition of licensors and consultants;
- Potential conflicts of interest;
- Availability of skilled labor; and
- Quality and availability of personnel to develop, evaluate, and administer the required type of contract/contract.

Cost and Schedule Control System Criteria

The cost and schedule control systems criteria should not represent a management system nor should they prescribe specific methods of organization or operation. The criteria should be intended to serve as standards for measuring adequacy of management control systems.

Project Managers should be free to organize in the manner best suited to their individual environments and management philosophies and may select the internal methods and procedures of their choice. However, these methods and procedures should result in systems providing the data and capabilities specified in the criteria in order to be acceptable claim avoidance and control tools.

In an effort to obtain consistent, reliable data on the status of major system acquisitions and major projects, governments have instituted a number of different approaches, ranging from complete reliance on contractors' existing internal systems to the imposition of detailed management systems for contractors to use during the performance of contracts. The criteria approach allows contractors to use the specific management procedures of their choice, but sets forth the characteristics and capabilities which should be inherent in an effective cost and schedule control system.

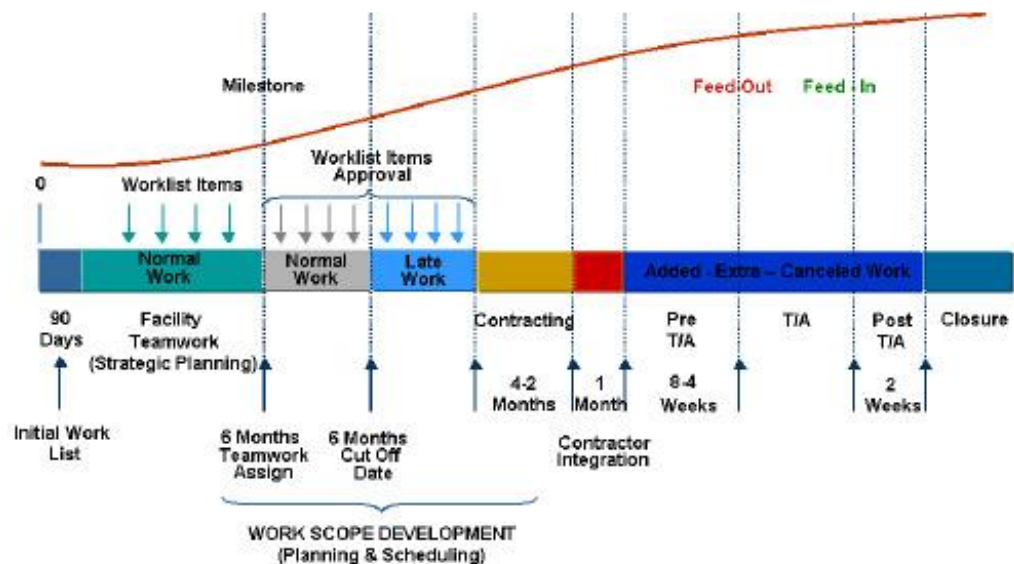
The objective is twofold: First to obtain assurance that contractors' internal management systems are sound and, once this is accomplished, to rely on summarized data for contract management requesting detailed data only in those areas where problems exist.

Conclusions

Project management should use all its arsenal of tools right from the inception of the project to allow them achieve their full benefit potential during the project life cycle.

Golden rules for claims' prevention have been with us for quite a while only we have been using them on a limited time frame lacking the focus and integration we have suggested they should have.

Testing of the golden rules in recent projects has shown more than encouraging results to go on deeper research and development of the concepts.



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Project Risk Management and Claims Avoidance

1 General Principles of Project Risk Management

1.1

As previously noted, proper project management is an essential component of successful claims avoidance efforts. In particular, claims avoidance is closely connected to project risk management. If risks can be identified early, then the Department can decide how to manage them before they occur. This lessens the opportunities for claims to develop if such risks actually occur during the project.

1.2

Project risk management is the science of identifying, evaluating and seeking to avert or contain those events or circumstances the occurrence of which would result in increased costs and/or delays to the project's completion. Possible risks are evaluated in terms of their potential costs and likelihood of occurrence. These factors are then weighed against the cost and effectiveness of avoidance measures. The objective is to promote the timely and economical completion of the project works by avoiding the occurrence of identified risks, or by minimizing their impact on the project. An employer can manage project risks either by risk control or by loss control.

1.3

Risk control seeks to limit exposure to risks by avoidance measures or by risk apportionment. Through the Contract, the Department can transfer contractual responsibility for a given risk to the Contractor, who then has the option of including contingencies for such risk in his bid or of assuming the risk. Alternatively, the Department may determine that it is in the best position to most economically prevent or limit the impact of certain risks and may choose to retain contractual responsibility for their occurrence.

1.4

Project risks may also be managed by loss control. Loss control involves financial provisions such as the retention of Contractor payments, budgetary allowances, and provision of bank guarantees or commercial insurance. Provisions such as these give the Department a financial offset to losses or delays to the project.

While the objective of project risk management remains constant, i.e. avoiding or minimizing risks, the strategy adopted for its achievement will vary depending upon the nature of the project and the special risks it presents. For example, the strategy adopted in connection with the construction or widening of a road through a highly developed area containing extensive existing utility services must address risks such as delays or damages resulting from the removal and replacement of discovered services installations.

On the other hand, the strategy for the construction of a new road through an undeveloped area will not need to address such risks but will need to take into account the possibility of other kinds of risks, such as unexpected sub-soil conditions

2 Categories of Risk and Risk Apportionment

2.1 While each project will present unique risks, general categories of risks are common to the construction industry as a whole and their consideration should be a part of every risk management strategy. The User who has knowledge of these general categories of risk can consider them in the context of his specific project and will be better able to identify and avoid potential claims situations.

2.2 The general categories of construction project risks include:

- 1) Force Majeure
- 2) Political Risks
- 3) Economic Risks
- 4) Design Risks
- 5) Physical Risks
- 6) Construction Risks

Table 1 next page presents the general categories of risk and gives examples of some of the specific risks associated with each risk category.

2.3 One of the methods of risk reduction available to an employer is the contractual transfer of risk responsibility to the Contractor. Table 1 also indicates relevant Articles of the General Conditions of Contract for Civil Engineering Works that address the general risk categories.

Note that risk elements not addressed in the General Conditions may be dealt with in the particular project's Form of Agreement, Special Conditions or other parts of the Contract.

The User, therefore, should review carefully his project's entire Contract, in particular the Special Conditions, to determine which other risks have been addressed contractually and whether responsibility for them has been allocated to the Department or to the Contractor.

TABLE 1: Project Risk Categories

<i>RISK CATEGORY</i>	<i>EXAMPLES OF SPECIFIC RISKS</i>
Force Majeure	a. Delays due to exceptionally adverse weather, floods, storms, earthquakes, etc.
	b. Damages to the works due to exceptionally adverse weather, floods, storms, earthquakes, etc.
Political Risks	a. Labor strikes, civil unrest, etc.
	b. New taxes / customs tariffs
	c. Expropriation of Contractor's equipment / machinery
	d. Embargoes on project imported items
Economic Risks	a. Delayed payments to Contractor
	b. Inflation / price escalation
	c. Unproductive / idle plants or labor
	d. Finance charges for loss of profit, extended performance bond, insurance, retention, etc.
	e. Default of subcontractors or suppliers
	f. Currency fluctuation
Design Risks	a. Change of design, quantity / quality
	b. Design omissions / errors by Consultant / Department
	c. Rectification works / specification change due to defective design
	d. Incomplete design
Physical Risks	a. Restricted access or possession
	b. Additional work
	c. Change of project profile and site
	d. Unanticipated soil conditions
	e. Loss of / damage to materials on site or during transport
	f. Damage to other property during transport of materials
Construction Risks	a. Suspension of works
	b. Extension of Time for Completion
	c. Prolongation of suspension
	d. Remeasurement of Contract items
	e. Different Site Conditions
	f. Availability / suitability of project materials
	g. Time and schedule delays

Basic Project Management Principles

The application of project and construction management principles and techniques is as essential to the success of the project as are sound engineering design and planning.

The paragraphs below outline the most essential elements of project management which are so crucial to claims avoidance and claims management.

Basic construction project management skills include:

- contract preparations;
- effective communication (both written and oral);
- conducting inspections of the work;
- assuring the quality of materials and workmanship;
- utilizing practical techniques for tracking documents;
- keeping accurate records;
- obtaining information from various project participants;
- keeping the Department informed of the project status;
- conducting progress meetings and preparing minutes;
- estimating, budgeting and controlling the project costs;
- planning, scheduling, and controlling the project time;
- monitoring project payments;
- closing out each phase of the project; and
- authority and decision-making.

Basic project management skills encompass important components of effective claims avoidance, including:

- Contract Administration;
- Planning and Scheduling;
- Cost Estimating and Cost Control;
- Negotiations of Variations; and
- Document Control.

Contract Administration - Knowledge of basic contract principles and the ability to apply the provisions of the Contract to construction events through effective contract administration are indispensable to the day-to-day functioning of the construction project manager. This aspect of claims avoidance is especially important for Department Representatives and Engineers, as how they interpret and apply the Contract during the construction phase often will be a determinative factor in whether a dispute becomes a claim, and if it does, in how the claim is resolved.

Planning and Scheduling - Planning and scheduling requires highly technical training to understand the Contractor's proposed approach and to ensure the completion of a construction project within the Department's time constraints. In particular, training in the principles and use of the Critical Path Method (CPM) scheduling is indispensable for analyzing the logic of the Contractor's baseline schedule, determining whether the project is on schedule or delayed, determining the cause of any delays, and allocating responsibility for delays to variations, lack of progress by the Contractor, delayed approvals by the Engineer or other parties or any other specific events.

The most difficult claims against employers are those for delays and delay impacts—consequently the more knowledgeable the construction project manager of the techniques for planning, scheduling, and schedule monitoring, the more effective he will be in preventing or mitigating claims.

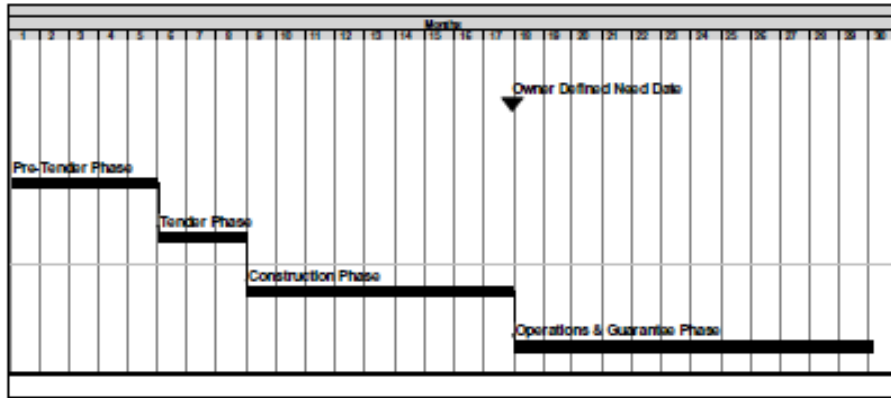
Planning and programming all phases of a project's life cycle can greatly assist efforts to mitigate or eliminate claims. Project programming and the tasks leading towards project completion are typically focused on the construction period, and this is with due cause because the majority of claims arise from events that occur during the Construction Phase.

However, each phase of the project's life cycle should be evaluated in terms of programming. Left unconfirmed, the impacts of unreasonable planned durations, actual durations, and/or delays occurring during any of the phases leading to completion of construction could have adverse impacts on the overall project completion date.

The Engineer with the Department should develop the initial programme at a summary level at the very beginning of the Pre-Tender Phase. It is typically at that time that the Owner is able to identify the '**Owner defined need date**', or the date operations of the completed facilities are to commence. The duration between the early days of the Pre-Tender Phase and the Owner defined need date becomes the window of time within which the Pre-Tender, Tender, and Construction Phases need to be accomplished.

Impacts occurring during any of the three phases can have a negative effect on the project completion and lead to claims. The following diagram represents a typical project life cycle illustrated by a CPM programme. This is the very first summary programme format from which further development is applied toward detailed programmes.

Typical Summary Project Life cycle



The above CPM summary programme illustrates that a delay during the Pre-Tender or Tender Phase may have an adverse delay impact on the Construction Phase. Such a delay may then cause events that lead to a claim. ***Programming of each and all phases of the project to a certain extent at the beginning of the Pre-Tender Phase may help mitigate claims during the Construction Phase.***

It is the combined duration and ‘give-and-take’ relationship between the durations of these three phases during the up-front planning process that can have an impact on the potential for claims arising during the Construction Phase. For example, the longer the duration planned and/or required to complete the Pre-Tender and Tender Phases, the shorter the duration becomes to complete the Construction Phase, and this compressed construction duration not only increases the cost of construction, but also may create an increased potential for claims.

Planning and programming at the onset of the Pre-Tender Phase can greatly assist project risk management and achieve a balance between the potential amount of construction costs and likelihood of claims.

The situation may also exist where the Owner has not defined a need date that defines the window of time to complete the Pre-Tender, Tender, and Construction Phases. In such cases, the up-front planning still needs to be accomplished by the Engineer / Department to properly monitor progress and sequence of operations.

Cost Estimating and Cost Control

Cost estimating is another invaluable tool for the construction project manager, as variations in the work are inevitable in the completion of a modern, highly complex construction project. In proper cost estimating and cost control, the construction project manager prepares “what-if” scenarios of the impact of variations before implementation.

This kind of analysis results in more accurate and timely information to the Department, so that decisions involving cost issues can be made with a reasonable degree of certainty in “real time”. Utilization of cost control techniques also minimizes the possible overruns and allows the Department to monitor and prepare for its financial obligations in an orderly manner.

Negotiations of Variations

Contractor negotiations can be stressful to the untrained construction project manager and can result in a breakdown of communication and a lack of trust. In such environments, claims are almost a certainty

The project manager’s negotiation skills are, therefore, important to the successful completion of the project with the least amount of claims and the greatest satisfaction to both parties.

Document Control

The organization and management of all project documents and records through systematic document control is an integral part of successful project management and claims avoidance



CLAIM AVOIDANCE PRE-TENDER PHASE

Pre Tender Activities
Contractor Classification and Short-listing
Tender Documents
Design Stages
Plans and Specifications
Contract Articles
Geotechnical Reports
Constructability Review
Construction Coordination
Generally
Notice of Intent
No Objection Certificates and Permits
Pre-Tender Checklist
Invitation to Tender

Pre-Tender Phase

The pre-tender phase of the project life cycle includes all activities leading up to the issuance of the invitation to tender. Pre-tender activities relevant to claims avoidance include the preparation of the following:

- Feasibility Study;
- Engineer Agreement;
- Concept Design;
- Preliminary Design;
- Detailed Design;
- Tender Documents; and
- Invitation to Tender.

One of the first and most critical steps to a successful project is the selection of the Engineer. The Engineer, under the direction and supervision of the Owner, will prepare the Tender Documents including the project design, drawings, and specifications. Generally, the same Engineer will be responsible for the supervision of the daily progress of the project.

The pre-qualification of prospective Engineers is therefore of the utmost importance. The Owner must ensure that the Engineer has the requisite experience, available staff and financial capacity to perform.

The pre-tender phase includes the all-important preparation of the Tender Documents, which become part of the Contract after the execution of the Contract Agreement. The Tender Documents are comprised of the Invitation for Tenders, Instructions for Tenders and Tender Forms. These documents include the specifications, drawings, the Bills of Quantities, Tender addendum and the Conditions of Contract.

The Tender Documents contain a description of the work and describe the procedures to be followed in the submittal of tenders including the documents that must accompany the tender. The Tender Documents provide the guidelines under which tenders will be considered responsive, the evaluation process to be followed in the award of the contract, and the requirements to be met by the successful tenderer prior to the execution of the Contract.

The very careful review of the Tender Documents prior to their release is critical to claims avoidance. Claims frequently result from ambiguities in or discrepancies among Tender Documents and correction of the documents prior to issuance is one of the most economical and efficient means of claims prevention.

It is particularly important that great care be exercised during the design stages to develop complete, correct, and coordinated documents as follows:

Plans and Specifications

Tender plans and specifications that are ambiguous or that give rise to conflicting interpretations are a major source of Contractor claims. The inherent complexity of major construction projects makes complete avoidance of these errors difficult, and even a minor contradiction between tender drawings and specifications can lead to a Contractor claim under the Contract Modifications articles of the Contract.

All parts of the Tender Documents must be carefully reviewed during the design phase to eliminate ambiguities and conflicts. In addition, Tender Documents should be subjected to careful examination in both a constructability review and through a quality control review to assure their adequacy, accuracy and completeness. A constructability review will review the plans from a contractor's viewpoint to see if the design indicated is really buildable. This review may indicate whether there are methods to improve the efficiency of the construction.

Specifications are meant to serve two purposes:

- 1) to enable the Contractor to interpret contract documents toward construction of the project; and
- 2) to enable the Owner to maintain its budget and obtain its basic requirements.

Typically specifications should provide all information and requirements regarding fabrication, manufacture quality, type, methods of installation,

field testing or inspection, guarantees or warranties, and finishing and cleaning. Plans or drawings generally indicate the method of connection, general locations of material, and to a limited extent, size and shape. Plans and drawings should show the physical relationships of materials, facilities or equipment while the specifications should detail the nature or content of project materials and equipment.

Accuracy and consistency in terminology between the plans and specifications are essential to claims avoidance. It is vital that the scope of the Engineer's duties with respect to the design of the project be clear and consistent with the design responsibilities delegated to the Contractor. ***Disputes between the Contractor and the Engineer over who bears responsibility for elements of the design are common and often result in claims.***

The Tender Documents should clearly distinguish detail design from shop drawings or working drawings so that there is no gap between the respective duties of the Engineer and Contractor.

If the Contractor is expected to provide design, the Tender Documents should clearly say so and should provide procedures for submittal, review, approval and warranty of the design.

One problem area where this kind of dispute commonly arises is that of proprietary specifications. Proprietary specifications identify a particular project requirement by the manufacturer's trade name. However, sole sourcing is usually not permitted. The Owner cannot specify the design by referring to a particular manufacturer but instead specifications regarding such items can only describe in general terms the Contract requirements.

In this case, the Owner will be limited in its ability to provide the detail design, which often will have to be achieved through the shop drawing or work drawing process. Contractors often object to this design responsibility and claim for resultant delays and additional costs. To avoid claims of this nature, the Owner must ensure that responsibility for this design work is clearly placed upon either the Engineer or the Contractor.

Contract Clauses

Ambiguous and conflicting contract clauses can make resolution of contract disputes more difficult and may create additional disputes. Therefore, every effort should be made prior to advertisement of tenders (or contract award) to identify and resolve ambiguous and conflicting provisions in the Tender Documents. This effort should also apply to conflicting provisions between the General Conditions, specifications, plans and other documents comprising the Tender Documents.

Geotechnical Report

Where the nature of the project requires a geotechnical report of existing site conditions, all prospective tenderers should receive the geotechnical report as part of the Tender Documents. The purpose of the geotechnical report is to inform the prospective tenderer of the site conditions that may be encountered. It is expected that, with this information, Contractors will have no need to add a contingency to their tenders as an allowance for the costs of unanticipated subsurface conditions.

However, note that under the General Conditions of Contract, the Contractor is usually responsible for inspecting the site and for evaluating soil conditions. While it may be in the project's interest for the Owner to provide tenderers with geotechnical data, it should be clearly stated that such data is provided for information only and does not relieve the tenderers of their responsibility to make their own assessments of soil and sub-soil conditions.

In the industry as a whole, this issue is frequently present in contractor claims.

It is critical to claims avoidance that any geotechnical data provided to the Contractor be accompanied by a clear disclaimer of responsibility so that there can be no question about the Contractor's ultimate responsibility for sub-soil conditions.

Constructability Review

Defective Tender Documents can constructively change a contract and lead to Contractor claims against the Owner. If any part of a project cannot be constructed in the manner set forth in contract documents, the Contractor may make a claim for increased project cost and delay under the Amendment of Contract articles.

In order to minimize this occurrence, it may be appropriate to evaluate the constructability of the project prior to issuing the Tender Documents. The Engineer should perform such evaluation. The Engineer should also work closely with the Owner Representative to evaluate and resolve constructability problems as they are discovered during construction.

Owner Coordination

Wherever a project will interface or possibly conflict with the services (existing or under construction) of another Owner, the Owner should endeavour during the design phase to coordinate the project with such other services to the greatest extent possible. Such coordination serves several ends. First, it will help to avoid delays that otherwise would arise during the construction phase in the form of the interfacing problems or services conflicts.

Delays frequently arise as a result of conflict between existing services and new construction or between the requirements of projects of different Owners under construction in the same area or that ultimately must interface with each other. The

likelihood of such delays can be greatly reduced by thorough inter-Owner coordination during the design phase.

Secondly, inter-Owner coordination will facilitate and encourage the responsiveness of the other Owners to the Contractor's Notice of Intent, which is filed to advise of the intended works and to request drawings or information regarding the other Owners' works or services in the area.

Where such coordination has been conducted during the design of a project, other Owners will be better prepared to respond quickly and more precisely to the Contractor's request.

Finally, inter-Owner coordination will facilitate the Contractor's receipt of the required No Objection Certificates and receipt of any required permits to proceed with the Works. Under Article 27 of the General Conditions (Compliance with Laws, Regulations and Special Instructions) the Contractor bears contractual responsibility for obtaining any required Governmental approvals or permits.

The Owner can, in the interest of the project, help to avert delays in this regard by coordinating the project with the services or works of other Owners during the design phase.

Construction documents will inevitably contain some errors or omissions. Checklists should be developed to assist the Owner in optimizing the quality of construction documents by the careful selection and monitoring of the Engineer during the design phase. The checklist should also offer guidelines regarding the issuance of the invitation to tender and the selection of the form of contract to be used.

The pre-tender phase concludes with the issuance of the Invitation to Tender. To be eligible to provide a tender on a given project, a contractor must be qualified. Generally all Contractors within the qualifying class for a given project may bid for the work. However, a contractor may be eligible to bid on a project according to his classification but he may be without the financial or physical resources required to execute those works if he is currently engaged in other major projects.

In some instances, the Owner may determine that it is in the best interest of the project to limit the number of Tenderers to only those Contractors with the appropriate resources available at that time. The Owner may do so within the framework of the existing classification system by short-listing prospective Contractors for specific projects.

In such cases, the Owner may invite qualified contractors intending to bid the project to submit their qualifications for the particular project, noting any unique characteristics of the project and identifying the special resources it is likely to require. In view of the subject project's particular needs, the Owner may request prospective Tenderers to demonstrate their experience in that particular field.

The Owner may also request the Contractor provide evidence that the financial resources, facilities, equipment, labor and material are sufficient to perform the work are or will be available within the anticipated time frame for the project.

The Owner would be especially interested in determining the prospective Tenderers' ability to perform the work in accordance with the planned completion schedule. Short-listing preference would be given to contractors demonstrating that their existing or pending business commitments would not jeopardize their ability to devote sufficient resources to the project at hand.

Project delays, and subsequently claims, often result when the Contractor's resources are over-extended or when he does not have the special expertise required for a particular project. Short-listing provides the Owner an effective means of avoiding claims by allowing it to ensure that the Contract will be performed by an able and adequately resourced Contractor.

Another way in which the Owner might ensure that the special needs of a particular project will be met by the Contractor is to provide for the separate submissions of technical and commercial proposals.

The Owner can then short-list candidates on the basis of their technical proposals and from the short-list proceed with selection on the basis of the commercial proposals.



CLAIM AVOIDANCE TENDER PHASE

Introduction
Clarification of Tender Documents
Response to Inquiries
Pre-Tender Conference
Tender Evaluation
Disclosure of Available Data
Tender Phase Checklist

Tender Phase

The tender phase of the project life cycle spans the time period from the issuance of the invitations to tender up through the award of the Contract.

The tender phase presents a number of important opportunities for the Owner to take action to avert claims during subsequent phases of the project.

During the tender phase, the Owner has a second opportunity to identify and correct errors, omissions or discrepancies in the Tender Documents. Tender Documents review that commenced during the pre-tender phase should continue during the tender phase to incorporate corrections or clarifications into any addenda issued by the Owner prior to the receipt of Contractor's tenders.

Response to Inquiries

Contractors often raise questions about the interpretation of Tender Documents prior to submitting tenders. These inquiries should be reviewed by the Engineer and answered promptly. Owner with prompt and complete explanations made to all interested contractors through the issuance of an addendum to the Tender Documents. Contractor doubts about the scope and content of the Contract often result in higher tender prices as a contingency against an incorrect interpretation.

It is recommended that all inquiries by prospective tenderers should be routed to the Engineer.

It is important during the tendering phase, that the Engineer be the single source of information from the Owner to insure consistency and so that a central record of responses can be maintained. All inquiries should be submitted only by writing and answered in writing. Response to telephoned inquiries should be only direction that the request for information be made in writing.

It is particularly important that any interpretations or clarifications made by the Engineer be issued to all prospective tenderers as an addendum to the Tender Documents. If it is impossible to respond within a reasonable time before bid opening, it may be necessary to postpone the date of tender opening to ensure that all tenderers receive the addendum in sufficient time prior to the tender due date.

Pre-Tender Conference

The Owner may hold a pre-tender conference prior to the receipt of Contractor tenders as a result of questions and problems identified by prospective tenderers. The purpose of the pre-tender conference is to give the Owner and the Engineer an opportunity to explain and clarify specifications and special project requirements. In addition, the Owner and Engineer should respond to questions by interested tenderers.

Adequate notice of this meeting must be given so that all prospective tenderers can arrange for attendance or representation. If time permits, prospective tenderers should be asked to submit their questions in advance so that the Owner may have time to prepare a complete response.

The Owner should maintain an attendance list identifying all individuals attending and the organization they represent.

All prospective tenderers should receive identical information in connection with the proposed project. Oral or verbal remarks and explanations will not qualify or amend the terms of the Tender Documents. All attendees should be advised that the Tender Documents may only be amended by a written addendum.

A written record should be made of the conference and furnished to all prospective tenderers, including those who do not attend. The record should include the questions asked, identification of the individual asking the question and the response or answer given.

Tender Evaluation

The “Instructions to Tenderers” should state that an award will be made to the lowest, responsive, responsible tenderer. To be considered responsive, the tender must conform in all material respects with the requirements of the tender advertisement and not limit the tenderer’s liability or the Owner’s rights in a way which gives one tenderer an advantage over other tenderers.

A non-responsive tender to be rejected.

The question as to whether a tender differs from the tender requirements in a “material” respect is often difficult to answer.

A deviation from the tender requirements should not be considered material if it is merely a matter of form or if it has no effect on price, quality, quantity, or delivery of contract items.

Any discrepancy must, however, be correctable prior to contract award without prejudicing other tenderers or altering the relative standing of tenderers. Generally, the Engineer determines non-responsiveness.

Discrepancies due to clerical errors are generally considered not to be material. For example, where unit or lump sum prices must be written both as figures and in words, a typographical error which results in the figure amount being different from the written version will not result in a non-responsive tender since the written amount takes precedence.

Any addenda to the Tender Documents must be submitted with the Contractor's tender, or the Contractor must acknowledge receipt of the addenda in the space provided on the tender form. As addenda are part of the Tender Documents, failure to do so may result in rejection of a tender as non-responsive.

A tender may be rejected if it contains conditions or qualifications. Each tender must be an unconditional offer by the tenderer to perform the work indicated. If specifically required, all tenderers must submit with their tenders a list of proposed subcontractors, suppliers, manufacturers, etc. Failure to do so will make the tender non-responsive.

A tender is non-responsive if it is not signed by a person with the legal authority to commit the tenderer to a contract. A stamped, printed or typewritten signature is acceptable only if the tenderer furnishes evidence with the tender of an authorization to execute documents in that manner.

A tender may be submitted with unbalanced prices, so that bid prices for some items appear to be very low and others quite high. This practice often indicates a belief on the part of the tenderer that some estimated contract quantities are incorrect. Unbalanced pricing is also used by tenderers to increase the value of items to be completed early in the work or that they anticipate will be subject to change. The Tender Documents should provide that a tender which is judged by the Owner to be unbalanced may be rejected.

Disclosure of Available Data

The Owner may determine that it is in the best interest of the project to release to the tenderer's all Owner information relevant to the project. Such disclosure may be desirable to optimize the quality of the bids received. However, information should be released with an explicit qualification that it is for information purposes only and does not release the tenderers from their responsibility to perform their own investigation and that no claims will be allowed on the basis of any errors contained in the information.

Information released to prospective tenderers typically includes all known information about subsurface conditions.

During the tender phase, the most important functions of the Owner and its representatives are:

- 1) the furnishing of clear and complete responses to questions posed by tenderers without contradicting the intent or purpose of the construction documents and
- 2) the evaluation of tenders.

Table 2 below sets-out in a checklist format some of the more important tender phase actions the Owner can utilize to reduce the occurrence of claims.

TABLE 2: Tender Phase Checklist

- 1** Determine how best to publicize the notice of solicitation, for example: through print media (including trade journals and newspapers), through official notices, through electronic means (internet), and/or through other sources intended to obtain the widest possible dissemination of the notice and the greatest participation of qualified contractors.
- 2** Arrange a pre-tender site visit and conference for potential tenderers, so they can familiarize themselves with the requirements of the project and ask questions to clarify areas of concern within the tender documents.
 - a. Keep minutes of all pre-tender conferences including all questions asked and answers given.
 - b. Include the principle design engineer in the pre-tender conference and be prepared to respond immediately to both technical and contractual questions by tenderers.
 - c. Make a record of the questions that were not answered at the pre-tender conference and provide the answer, in writing, to all tenderers that have requested tender documents.
- 3** Clarify areas of concern during the pre-tender stage by issuing written amendments to the tender documents. Aside from specific oral representations made by authorized representatives of the Owner at the pre-tender conference(s), insist that all questions by tenderers be submitted in writing.
- 4** Avoid all unofficial communications with tenderers during the tender period and avoid the appearance of any impropriety in the tender process.
- 5** Advise all tenderers of the date and place for the receipt of tenders by the Owner and the precise time after which tenders will not be received.
- 6** Where technical and commercial proposals will be evaluated separately, identify all evaluation factors and any significant sub-factors that will be considered in making the award. State the relative importance of the evaluation factors and sub-factors, including price or cost.
- 7** Provide tenderers with instructions for completing the tender and bond forms.
- 8** Instruct tenderers to return tenders in a sealed envelope or, if appropriate (pursuant to the instructions for tenderers), in two separately sealed envelopes—one containing price and commercial data, the other containing all non-price related data. All tenders must be marked with the date and time of receipt, and kept secure until opened and recorded.
- 9** Make a written notice of award as soon as it is practicable after the evaluation and clarification of tenders. Notify unsuccessful tenderers of the award and, if appropriate, of the amount of the award.
- 10** Consider incorporating in the instructions to tenderers a requirement that the successful tenderer must provide a complete copy of its detailed tender papers and summary sheets into a secure escrow account within five days after contract award. The Owner may use the secured copies only if there is a dispute between the parties over quantities, pricing, or computations regarding specific work elements.
- 11** Keep accurate records of the tender process in case of any protest.

CLAIM AVOIDANCE CONSTRUCTION PHASE

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Importance of Project Management / Checklist
Monitoring Schedule and Costs
Schedule Control
Cost Control
Document Control
Generally
Major Categories
Relevance to Project Life Cycle Phases
Correspondence
Status Reports
Test Reports
Photographs
Video Tape
Document Control Checklist

Construction Phase

The most difficult part of any project occurs during the construction phase.

All parties involved, including the Owner, the Owner's Representative, the Engineer, the Contractor and the Subcontractors and Suppliers must keep open the communication lines and function professionally to ensure the ultimate success of the project.

Claims avoidance at this phase of the project requires that all parties perform their respective roles efficiently, effectively, and fairly. The best way to avoid claims is through preparation and planning, for the unforeseen events as well as for events that are anticipated, i.e., project risk control through effective project management.

The basic principles of project management and project risk management have already been addressed in previous sections.

Table 3 next page presents some primary project management concerns in a check list format for use during the construction phase of the project.

TABLE 3: Construction Phase Project Management Checklist

1 Assemble the Owner’s construction project management team during the tendering phase, so they can begin to familiarize themselves with the demands of the project. Perform a constructability review.

2 Establish clear lines of authority and responsibility within the Owner for various construction phase functions (e.g.: technical/design functions; financial and accounting functions; contract interpretation and administration; and legal functions).

3 Develop a plan for efficiently handling the following typical items of Contractor requests and submissions:

- a) Request for information (RFI’s): these are routine requests which the Contractor makes to clarify requirements contained within the drawings and specifications—typically of a technical nature.
- b) Technical submittal: in most cases, the specifications will require that the Contractor submit product data, catalog information, calculations, samples and shop drawings of individual equipment items and systems for approval by the Engineer. The Owner’s construction project management team is responsible for providing a timely review and approval or rejection of the submittals.
- c) Variation/notice of variation/proposal for extra cost: when the Owner or its authorized representative requests (orally or in writing) that the Contractor perform work that is a modification or change to the Works, the Contractor may submit a notice of variation and/or a written proposal advising the Owner of the extra costs to be anticipated as a result of the change.
- d) Critical path method (CPM) or other form of scheduling information: the Owner must insist that the Contractor submit a detailed plan for performing the work, so that the Owner can monitor the Contractor’s performance against an approved “baseline” schedule. Usually, the specification allows for the Owner to review and comment upon the proposed plan prior to its approval for use as the baseline.
- e) Schedule update: the Contractor must update the schedule periodically (usually once every month). This updated schedule is provided to the Owner for approval. Any changes in the sequencing or number of activities in the schedule must be addressed by the Owner in an expedited fashion.
- f) Material test results: test results will frequently be provided by an independent materials testing agency hired by the Contractor. The Owner’s representatives must be in the position to monitor the Contractor’s compliance with the testing requirements of the Contract and immediately review all test results to determine if the materials used for construction meet the minimum demands of the specifications.
- g) Payment requisitions/certificate: to facilitate periodic (usually monthly) payment of the Contractor, the Contractor will present a monthly statement of work completed and materials on site. The Engineer will verify and prepare a payment certificate for 90% of completed works and 75% of materials on site, or on such other basis as may be determined according to terms of Contract. national contractors are exempt from retention if a bank guarantee is provided. Payment is required within 45 days of issuance of payment certificate by Engineer.
- h) Request for deviation: in some cases, the Contractor will request that a deviation from the Contract drawings and specifications be permitted to expedite the work or prevent delays.
- i) Request for time extension: should the Contractor’s progress fall behind the plan established in the approved baseline schedule, the Contractor may request a time extension to avoid delay penalties. The Owner’s representatives must have the ability to quickly analyze such requests to determine if the time extension is justified, analyze the period of extension to be granted.

(Table 3 continues..)

- j) Claim correspondence: from time-to-time, the Contractor may claim that the Owner or its representatives have improperly administered the Contract. In such situations, the Owner must scrupulously follow the dispute provisions of the contract and attempt to resolve quickly any differences of interpretation in order to avoid an adversarial relationship with the Contractor.

4 Study the Contract—become familiar not only with the technical specifications of the project, but also with the requirements of the Agreement, the General and Special Conditions, Amendments to Tender Documents, etc. In particular, note the following:

- a) The notice requirements for requesting variations in the work and any additional compensation.
- b) The notice requirements by which the Contractor must request an extension of time for unforeseeable delays or other circumstances.
- c) The notice requirements for making any claims by or against the Owner.
- d) The notice requirements and specific procedures for terminating the contract, either due to the default of the Contractor or for the convenience of the Owner.
- e) All phasing requirements, interim milestones, and related delay penalty provisions.
- f) All submittal requirements and times within which submittals are due from the Contractor and its suppliers.
- g) Payment, bonding, guarantee, and other articles relating to the financial responsibilities of both the Owner and Contractor.
- h) Responsibilities of the Engineer.
- i) CPM or other scheduling specifications.
- j) The timing requirements for providing all pieces of Owner-furnished equipment and materials.

5 Understand the contractual relationships of the parties involved and the risks assumed.

6 Utilize standard form RFI Logs, Variation Logs, Proposal Logs, Material Testing Logs, Correspondence Logs, and other documents which summarize events of a recurring nature.

7 Recognize the importance of scheduling—make a commitment to use CPM or other scheduling tools, as appropriate, and make them work successfully by:

- a) Reviewing and approving (or rejecting) Contractor prepared schedules and updates on a timely basis.
- b) Attending joint meetings to resolve technical differences.
- c) Updating the schedules at least monthly in joint sessions.
- d) Maintaining accurate records on file of each update including network diagrams, computer generated reports, and electronic records.
- e) Maintaining a ledger of all Contract time extensions requested, approved, pending or denied (either partially or totally).

8 Keep senior management and legal counsel informed of any breach of the contract or anticipatory breach requiring early intervention.

9 Monitor the Contractor's daily workforce and compare actual labor utilization with planned labor utilization.

10 Monitor the Contractor's productivity at various stages and compare actual productivity with planned productivity.

11 Interview worker's periodically at the project site to determine if the Contractor is conforming to any labor hour requirements of the Contract and/or to any applicable labour laws.

(Table 3 continues..)

12 Prepare interim reports of deficiencies and omissions in the work and obtain the Contractor's commitment to correct same immediately without waiting to the end of the project.

13 Keep accurate and detailed records of events in the field—establish regular meeting times to discuss progress, negotiate variations, and resolve problems.

14 Maintain detailed safety records of job related injuries—be proactive about job safety to eliminate the possibility of serious injuries to persons and property.

(end of table 3)

The items contained in Table 3 above reflect basic project management objectives, including the monitoring of time, costs and compliance with the Contract. By pursuing these objectives, the Owner also will be able to anticipate and mitigate disputes and delays.

Three important components of project management useful in achieving these objectives are:

- (1) schedule control;
- (2) cost control; and
- (3) document control.



Schedule Control

The construction schedule is an effective project management tool for monitoring current activities and for anticipating future events which may impact work progress. The Contractor should be required to develop a project network schedule showing in detail and in an orderly sequence all activities, both on and off-site, necessary for timely completion of the work.

In addition, the Contractor should develop a manpower schedule for each section of the work showing labor resources expected/required over the duration of the Contract and a plant schedule detailing the plant requirements needed to achieve the durations established in the construction schedule.

The value of a schedule will be dependent on the effort expended in its preparation and use as a management tool by both the Engineer and the Contractor.

Optimization of the schedule as a management tool requires that it must be constantly updated and kept current. Such schedule maintenance is a joint responsibility of the Contractor and the Engineer.

Pursuant to Contract requirements, the contractor is required to submit to the Owner a detailed schedule for the phases of the construction of the works. This submittal is to be made within two (2) weeks of the signing of the Contract. Wherever possible and according to the project needs, the Contractor's schedule should utilize the Critical Path Method (CPM), consisting of a network of activities, with estimated durations, times for completion and depicting the sequence and relationships of activities.

The sequence of activities comprising the longest path through the schedule will be the "critical path" for the project and should be consistent with the overall Contract duration as agreed by the Contractor and the Owner.

The Owner should approve the Contractor's schedule only if it conforms to the overall Contract duration and presents a reasonable plan for accomplishing the Works. In accordance with usual contracts, the approved schedule may not be amended unless by written consent of the Owner. The approved schedule is to be used by the parties to monitor the Contractor's progress and to measure any delays to the Works.

As noted above, the approved schedule must be reviewed and updated regularly so that it reflects the actual work completed. Schedule updates should be accomplished at least on a monthly basis. The Owner may require more frequent updates if the nature of the project warrants.

Cost Control

Cost control is achieved by monitoring actual project costs, estimating remaining costs, and computing the variance between the total estimated cost to complete and the original contract value. This information can be used to reverse trends so that project cost overruns are avoided or minimized.

Cost reports, along with the project schedule, are used to forecast total project costs and completion dates. Estimates of cost to complete should be based on a detailed schedule of values along with reliable measures of actual completion to permit the identification of problems to pre-critical stages of the work so that suitable corrective measures can be taken.

Certification of payments to the Contractor by the Owner should be a simple process to ensure prompt payment and avoid an usually disputed area.

Document Control

Document control - the organization and maintenance of project records is one of the most critical components of claims avoidance and management.

The avoidance of claims and early resolution of disputes often will depend on the quality and thoroughness of records that have been maintained throughout the project.

Accurate records of meetings, conversations, work performed evidence, construction equipment on site, daily labour force on site by craft or trade, and material or equipment deliveries may prove indispensable in the event of a contract dispute.

Accurate records must be kept on a regular basis. The credibility of records is much greater when it can be shown that they were prepared as a regular business practice regardless of the circumstances and formally delivered to the other party. Suggested major categories of documents to be maintained include:

- Correspondence
- Submittals
- Status Reports
- Variation Orders
- Test Reports
- Issue Files
- Photographs
- Meeting Minutes
- Video Tape
- Requests for Information

Note that while document control is most active during the construction phase, it is important to maintain records with a view to claims avoidance during all phases of the project life cycle.

Correspondence

All communications between parties such as memos, faxes and letters should be preserved for future reference. No correspondence should be discarded.

A document which appears unimportant at one stage of a job may develop greater significance at a later date.

Parties unfamiliar with the job may have to analyze a claim after the project has been completed largely on the basis of such documentation, especially if key participants in the disputed project have moved on to other projects. It is also important that letters and memorandums be written in a timely fashion.

Letters written long after the issue they address are less valuable in dispute resolution because they are often viewed as being “self serving.”

The facts of any situation should always be stated clearly and thoroughly. Verbal communications always should be confirmed in writing if having any contractual, cost or time significance.

All written communication should be drafted bearing in mind that the Contractor may subsequently use it in a claim against the Owner.

Written communications should not be used for apologies or self criticism and the writer should avoid admissions of fault wherever possible. This practice is not intended to deceive or to avoid being truthful but rather to protect the Owner from admissions that may not reflect the full facts or circumstances. Once written they may nevertheless be used against the Owner.

Status Reports

Daily logs and reports, progress schedules, minutes of job meetings, CPM schedule updates with accompanying progress reports, evaluations and recommendations are valuable records that should be maintained in an accurate filing system. Such information is often essential to reconstruct the “as-built” schedule for a project.

Test Reports

Test reports and test records made prior to and during construction should be organized and maintained with the date and results of each test, including failures and re-tests. When questions arise about the quality of construction, tests should be taken promptly. Note that the Contractor’s responsibility for the costs of such test will depend upon the ultimate result, in accordance with General Conditions Articles on Materials Goods and Workmanship.

Photographs

Photographs can be of significant importance in establishing the circumstances and liability for claims by the Contractor.

All photographs should be clearly marked to identify the location, date and a description of the work or area photographed.

Video Tape

A record of some construction activities on video tape may be necessary when a still photograph cannot adequately capture the event. Table 4 below provides a checklist of specific records usually maintained by highly effective and organized construction employers. The User should note that some of these records may not be appropriate or practical for a specific project and should consider whether his project calls for any unique records.

TABLE 4: Document Control Checklist

- 1** *Daily Inspection Reports* (detailing the type and location of work by the Contractor and each Sub-Contractor on site)
- 2** *Daily Contractor Labor Records/Certified Payroll Records* (indicating the number of hours worked by each employee of the Contractor and all subcontractors on site)
- 3** *Daily Equipment Utilization Reports* (indicating all equipment on site and whether operating or not)
- 4** *Daily Record of Stored Equipment* (on and off site) **5** *Daily Diaries of the On-Site Project Manager* (hand-written notes of communications, instructions issued, and problems encountered)
- 6** *Weekly Project Summary Reports* (summarizes the information contained in the above reference daily reports)
- 7** *Monthly Project Summary Reports* (summarizes the information contained in the Weekly Project Summary Reports and includes payment and cash flow projections for the balance of the project performance period)
- 8** *Monthly Progress Payment Records* (Contractor's application for payment and any changes made thereto by the Owner including the reasons for the change and whether the Contractor agreed to the change)
- 9** *Progress Meeting Minutes* (documenting priority activities and events and indicating which parties have primary and secondary responsibility for implementation)
- 10** *Deficiency and Omission Reports* (documenting the discovery of defective workmanship and equipment, and the instructions issued to the Contractor for corrective action, Contractors response should be included)
- 11** *Safety Meeting Minutes* (documenting safety hazards, issues raised at weekly or regular safety meetings)
- 12** *Project Scheduling Records and Updates* (including chronology and comments made prior to the approval of the "baseline" schedule and all computer-generated update reports, progress narrative reports, and network diagrams)
- 13** *RFI Log* (showing the disposition of each RFI issued on the project—i.e.: dates of RFI submissions and response times from the Engineer or Owner's Representative and whether or not the RFI was converted into a variation)
- 14** *Variation Log* (showing the disposition of each variation issued on the project—i.e.: dates of variation orders from the Engineer or Owner Representative, dates of proceed orders in advance of cost negotiation, dates that cost estimates were prepared, dates of negotiation, and the cost of each variation along with cumulative cost totals)
- 15** *Variation Records and Supporting Files* (Contractor initial and revised proposals, the Owner Representative or Engineer's cost estimate, memorandum of pre-negotiation objectives, memorandum of negotiation, final accepted Contractor proposal including, where appropriate, "fragnets" for incorporating the variation activities into the CPM schedule, and the formal contract modification document)
- 16** *Telephone Conversation Logs* (date, from whom the call was received or to whom the call was placed, subject of the call and instruction or disposition of the call)

(table 4 continues)

17 Correspondence/Facsimile/Electronic Mail Log (date of message, date of receipt, name of person sending the message, name of person to whom the message was sent, the subject matter, the disposition of the message, and a cross-reference to the response message or other instruction)

18 Submittal Log (submittal dates from the Contractor, dates sent to and returned from the Engineer, disposition, re-submission and re-review dates and final “record set” submittal and approval dates)

19 Submittal Files (for catalog drawings and description of materials and equipment—organized by specification section)

20 Materials Testing Logs (dates, description of test performed, numerical test score, disposition, re-testing dates, etc.)

21 Bonds, Guarantees, General Warranties (performance and payment bonds, guarantee agreements, and official warranty documentation for the maintenance period in the contract)

22 Contract File(s) (all tender documents, contract documents, drawings, specifications, and addenda thereto)

23 Contract Drawings (tender set and as-built set)

24 Project Photographs/Videotapes (aerial photographs preferred, if appropriate, with date stamp information and all negatives organized by date; narrated videotapes of problem areas demonstrating equipment/labor performance and time-and-motion studies)

25 Punch list Files (retain all iterations of punch lists with date work was completed sorted by each area of the project, by trade)

26 Major System Testing Procedures/Results Records (for major mechanical, electrical, plumbing, and special systems)

27 Operating Instruction Manuals (organized by system)

28 Maintenance Manuals (organized by specification section)

29 Inspection Reports by Outside Agencies (e.g.: fire alarm testing and approval, certificate of occupancy inspection, electrical inspection, etc.)

30 Claim Issue Files (containing notice dates, subject of the claim, relevant contract provisions, analysis of claim, summary of disposition, and whether or not the Contractor has appealed the decision of the Owner)

31 Preliminary Acceptance Certificate



CLAIMS AVOIDANCE POST CONSTRUCTION PHASE

Generally
Contract Close-out Checklist

Post Construction (Operations & Guarantee) Phase

The operations and guarantee phase commences on completion of the project works (preliminary handing-over) and continues through to the final handover of the project to the user.

During this phase, the Department's claim avoidance efforts are aimed primarily at obtaining correction of any defects in the works and documenting the conclusion of the Contract.

At the conclusion of the maintenance period, the final handover of the project is accepted by the Department, which issues the Final Acceptance Certificate and releases retention monies and the Performance Bond.

There are a number of important activities which must be carried out during close-out of the Contract and the proper execution and the careful documentation of these activities are important to preclude claims.

The table 5 next page lists activities which should be carried out to ascertain and record fulfilment of the Contract requirements.



TABLE 5: Contract Close-out Checklist

1 Inspect and prepare detailed punch list items *by trade* for the completion of each project area (e.g.: room-by-room, public areas, outdoor areas, sections, buildings, infrastructure systems, etc.).

2 Obtain all material and equipment warranty information and ascertain that the warranties meet the contract requirements.

- a) Observe performance testing of all equipment and life safety systems.
- b) Obtain written operating and maintenance instructions for mechanical, electrical, plumbing, and specialty systems and equipment. Where possible schedule the attendance of operating and maintenance personnel at operating and maintenance classes provided by suppliers and manufacturers of installed equipment.
- c) Obtain as-built drawings for the project showing all deviations and changes from the contract drawings and specifications.
- d) Provide the Contractor with the *Preliminary Acceptance Certificate* when no contract work other than minor punch list items remains to be completed by the Contractor.
- e) Obtain written Contractor warranties, bonds, or guarantees according to the Contract requirements.
- f) Resolve any outstanding claims in the best interests of time, cost, and potential escalation.
- g) Make any remaining adjustments to the contract sum to reflect all variations to the work and to account for delay penalties assessed or any incentive payments earned by the Contractor.
- h) Obtain Contractor's full and complete *Release of Claims*.
- i) Provide the Contractor with the *Final Acceptance Certificate* (with a copy to its bonding company) *only when all of the Contract work has been fully inspected and completed and when the Contractor has furnished acceptable contract closeout documentation including furnishing the Department with the final payment requisition.*

Construction Claims Management

Claim analysis has become such an important issue for project management and it cannot be left out of any respectable publication on the subject.

As with any human endeavor where more than two parties are involved, contracting operations are fraught with controversy and dispute, and it has become important to know how to prevent and solve claims in time to avoid compounding the problem later on in the contract.

It is everybody's dream to have a construction contract where the conditions are ideal, to have a job that is completed on schedule and within budget with few changes in scope and without unexpected occurrences. Unfortunately, such conditions are seldom found.

This discussion will deal with the subject of claims on construction contracts, and related areas, as follows, Typical construction claims against owners, Typical construction claims against the contractors, Legal implications of critical path method schedules, Claim-analysis procedures, Claims-prevention suggestions, Record management.

Typical Construction Claims against Owners

The most frequently found reasons to file a claim against the owner of a project are:

- Poor project planning;
- Scope changes ;
- Constructive change orders;
- Errors and omissions;
- Contract acceleration and expediting;
- Work suspension and stoppages;
- Site access or availability;
- Other contractors interferences and delays;
- Strikes and acts of God; and
- Low bidders.

Poor Project Planning

Inadequate attention to front end project planning usually ends in:

- Inadequately defined scope of work; or
- Incomplete and/or incorrect design.

Most of the time, poor planning is attributed to rushed (fast track) projects bringing about:

- Shortened bid periods;
- Limited site investigation;
- Unreasonable construction periods;
- Badly specified construction materials; and
- Inappropriate manpower.

Whatever the reason, claims are abundant when planning is not taken seriously enough to produce an adequate environment to develop a project.

Scope Changes

Scope changes are usually initiated by a change order, letter of intent, or a field directive. All of these may direct changes or deletions in the work required by the contract, but within physical limits and the general scope of the work.

Change orders become part of the contract as soon as they are signed by the contractual owner representative. The contractor may or may not sign the change order but is required to proceed immediately.

If the contractor does not agree with the change order time or price he must contest it within the prescribed period of time stated in the contract document.

Change orders and their compounding effects on the contract execution are the most usual source of claims.

Constructive Change Orders

Sometimes owners or their authorized representatives give or fail to give directions that interfere with the normal contract development. These actions have the same effect as if a formal change order has been issued, and a constructive change is usually claimed by the contractors.

Constructive changes are some times found after the fact, when reviewing schedules, records, letters and minutes of meetings. This does not negate the contractor's right to submit a claim.

Contractors are advised to train their construction teams to recognize constructive changes since this can make the difference between a profit and a loss situation.

Errors and Omissions

A potential for claims arises when the contractor questions plans and specifications given by contractual terms and the owner or his representative fail to recognize it as a valid change order.

It is essential to document the case as it develops and communicate the results and possible impact according to contractual stipulations. Errors and omissions are difficult to prove because technical issues can become unclear due to circumstances such as:

- Change of design perspective;
- Change of vendors specifications; and
- Changes in staff originally handling the contract.

Contract Acceleration and Expediting

Contractors are frequently directed to accelerate performance of the contract or a portion of it within the original or adjusted completion date. This direction constitutes a change in the contractual obligations and the contractors have the right to pursue compensation for it.

Also, contractors may expend extra effort in response to a directed increase in work without an increase in time allocated to the contract. This constitutes a constructive acceleration. Validation of this kind of claims is, of course, difficult and requires the contractor to prove his case.

Work Suspension and Stoppages

When contractors are notified to suspend work under circumstances other than those for which they are to blame, they have the right to be compensated for the time and cost involved in the suspension or part of the suspension even if the contract document calls for work-around directives.

Documentation related to the status of the job at the time when the stoppage takes place must be accurately established for settlement of work suspension and stoppages related disputes.

Site Access or Availability

When the contractor scheduled activities have the need for a right of way or a location to proceed and the owner fails to provide it on time, the contractor may pursue compensation for the time and cost of the resources scheduled and proved unable to perform.

Since this situation is usually aggravated by owner's failure to recognize any implication on the development of the job, it is recommended to faithfully document the situation by related correspondence, schedules, photographs and the like.

Other Contractors' Interference and Delays

When the contractual obligation forces the contractor to joint-occupancy, interferences resulting from the lack of progress by other owner's contractors in the area may hamper performance and a justifiable claim for compensation will arise.

Planning and scheduling of this type of jobs must be broken down in as much detail as possible to allow proper interfacing with others and analysis of delays should they occur.

Strikes and Acts of God

Time delays due to facts beyond contractor's control as union strikes, boycotts, unusual weather, earthquakes, fires, and floods are excusable delays and the contractor is entitled to a time extension.

Low Bidders

Due to a number of circumstances such as, failure to understand the scope of the job, misunderstood technical requirements, bid mistakes, and desire to improve competitive edge, contractors occasionally come up with extremely low bids which make them excessively cost conscious in their efforts to recover from their tight situation generating disputes and claims for almost every other issue during the contractual period.

Typical Claims against Contractors

Owners also have the right to claim to recover from issues that may harm them economically. Claims by the owners usually concern:

- Contractors late completion;
- Out of specification materials;
- Defective work; and
- Property damages.

Contractor's Late Completion

Contracts usually call for a completion date on the assumption that the owner is in need of the facility by that date. A late finish by the contractor may bring inconvenience and/or financial losses to the owner.

Some contracts include clauses where penalties are considered against the contractor in the event of completion delays, but whether or not the contract contains such a clause, the owner may claim damages for late completion.

Out of Specification Materials

Discrepancies may result due to differences in interpretation of contractual material specifications. Contract specification omissions are frequent, with the undesirable result that decisions have to be waited for or directions given at the job site, with the consequent delays and/or increases in scope of the job.

The main problem comes while supplying materials where it is known there are numerous competitive manufacturers which might substitute for one another. Decisions have to be taken on the run and it is usually all left to the discretion of the owner's engineer.

The contract language is to be followed, but when the issue is material specifications multiple complications arise since every owner wants to save money by competitive bidding prices from different manufacturers while at the same time achieving the maximum financial and functional efficiency.

Defective Work

Contractors are responsible for the quality of their work as specified in contractual terms. This is not always easy to establish due to the fact that by definition defective work is difficult to spot and decide upon.

Defective work may be blamed on the designer due to lack of adequate specifications, on the owner due to after-the-fact actions that disturbed the original design; or on the contractor due to lack of skills.

It is not difficult to see why so many claims are generated on this subject.

Property Damages

Property damages claims may result from several sources such as:

- Damaging owner's installations;
- Damaging neighbors installations;
- Violating rights of adjacent property owners; and
- Violating Government area regulations.

Even if contractual clauses call for holding the owner blameless in all of the above cases, it may happen that law suits have to be settled by the owner before he can pass the blame to the contractor and accepted by him.

Legal Implications of Critical Path Methods

Critical path methods (CPM's) have become the most useful and practical tool for negotiating contractual disputes.

Properly designed schedules include consideration for:

- Total scope of the job;
- Organized sequence of activities needed to perform the job;
- Duration for all activities involved; and
- Resources needed to accomplish each activity

In other words critical path method schedules depict what has to be done, when it has to be done, how it has to be done, who has to do it, and where it has to be done.

Contractual obligations usually include the following:

- Approval of an original CPM;
- Procedures to update the CPM periodically;
- Procedures to revise the CPM; and
- Procedure to utilize the CPM as a tool for claim settlements.

The legal implications of an approved critical path method schedule are as follows:

- Both parties are bound to follow the schedule specifications;
- There is an implied guarantee by both parties that they will not hinder, delay and/or disrupt the other party;
- Manpower levels and crew sizes established in the schedule have to be followed unless changes are duly authorized;

- Equipment utilization incorporated in the schedule is binding and failure to follow it, constitutes a breach of the contract;
- Materials, tools and consumables as specified in the schedule are equally binding;
- Contractors are liable for productivity lower than that allocated in the schedule;
- Job manning and lay off schedules are contractual obligations and lack of compliance constitutes a breach of the contract;
- Inspections and approvals by the owner, should be performed according to schedule; and
- Any deviation from schedule should be settled as per contractual procedures involving schedule revisions.

Claim Analysis Procedures

The main purpose of establishing a claim analysis procedure is to have a comprehensive, consistent and systematic approach to claim analysis and evaluation during the negotiation period.

The following outline has proved successful in accumulating the required data for an analysis as well as aiding the analyst in his approach to the problem at hand.

All available documentation and information which is pertinent to the claim should be gathered and examined closely. It is essential to realize that the analyst should exercise complete and unbiased judgment in reviewing the contractor's position as well as that of the owner.

Study review data pertinent to the claim must be categorized as follows:

1.- Brief of the Case .-

Contract study

Contracts should be read and analyzed carefully. Contracts differ depending on the nature of the job; special clauses can be found, scheduling requirements are not always the same, unit rates do not necessarily follow a set pattern, and a number of minor changes peculiar to the claim in hand may have to be taken into consideration.

The analyst must not forget that the contract is his most important document and that having a detailed knowledge of it facilitates understanding and appropriate interpretation.

Claim submission

Study of the claim submitted by the contractor gives the analyst the necessary guidance in deciding which areas of the contract should be investigated in more detail than others. Furthermore, it sets out the contractor's standing and pretensions.

Change order log and associated schedule areas

Since most of the problems during the development of a contract are derived from change-order generation, it is essential to have a well- organized change-order log which

must include schedule association, type of settlement, job definition, and resource allocation plus stipulated progress, cost and schedule controls.

Progress reports

These documents will show figures duly approved by both parties and they will provide a firm basis for reconstruction of the facts. They will be the foundations of an as-built schedule which in turn will present irrefutable evidence.

Job explanation meeting minutes

Having a good record of what transpired during the job-explanation meeting has proved to be helpful in resolving parts of a claim which may be subject to different interpretations, all of them apparently reasonable.

Weekly construction meeting minutes

A careful reading of the minutes of the weekly construction meeting gives the analyst a good idea of how the relationship between the owner and the contractor developed and how problems in different areas were handled.

Once the brief of the case, as outlined above, has been completed, the analyst will have formed his own opinion of the job and can now start to study the owner's position on the claim.

2.- Owner's Position.-

Job philosophy

Due to ever-changing circumstances, owner policies at times affect the contractor in a way that might be overlooked by the owner's representatives, thereby creating an unfair situation for the contractor.

The analyst must determine from his studies and job-related interviews if the job philosophy had been changed at any time and decide thereafter what kind of impact it might have produced.

Scope of the job

Careful study of all drawings and specifications stipulated in the contract is a must for the analyst and will give him the edge at the negotiation table over misinterpretations of the scope of the job by the owner or the contractor.

Owner expectations

Owners' expectations are generally understated, seeking the lowest starting position in negotiations. Recognition of this fact should enable the analyst to make unbiased recommendations.

3.- Contractor's Position.

Scope of the claim

Having an open and receptive mind when analyzing the contractor's claim, will allow the analyst to clearly understand the claim's foundations and to avoid getting involved in issues not being addressed by the contractor.

Contractor expectations

Contractors' claims are generally overstated seeking the highest starting point in negotiations. Analysts must be aware of this fact and be ready to disclose it at the first contact with the contractor.

4.- Claim Analysis and Evaluation.

Based on all the information gathered thus far the analyst should be able to organize the available data to establish a comparison between what was planned and what actually happened and why. In evaluating the results of the above-mentioned comparison the analyst must keep in mind that contractual stipulations will govern decision-making at this stage.

If schedules are an essential part of the claim, 'as-planned' and 'as-built' schedules must present a clear picture to all parties.

Schedules should only show the part of them that have been affected by the issue in dispute and the resulting impact on major milestones.

5.- Recommendations.

The analyst should complete the investigation by offering specific, constructive suggestions in terms familiar to the party's representatives. Presentation is a key factor in claim analysis. If all parties can understand the results and recommendations presented by the analyst, they will create an environment for fruitful, positive negotiations.

Claim Prevention Suggestions

1.- Carefully analyze and consider exactly what you are building and precisely how it will be built so the contractor does not have to assume or guess about any aspects of the job.

2.- Complete the project design before the contract is bid, and if some parts of the project cannot be completely designed at bid stage, clearly identify them and its possible impact.

3.- Conduct a thorough review of the design prior to the bid stage to identify and correct any design errors or inadequacies.

4.- Give bidders sufficient time to carry out a complete review of the bid package and an investigation of the construction site.

5.- Allow enough construction time, remember that in this context, time is not money. Do not assume that bidders will simply increase their bids to cover a short schedule.

6.- Identify with enough anticipation what type of contract will best suit the project.

7.- Think about every sentence included in the contract, why it is there and whether it is necessary.

8.- Clearly identify in the contract every operation that the contractor must accomplish to complete the job.

9.- Draft for clarity, not confusion. Use a standard list of definitions, and always use the same defined word consistently.

Never use statements such as:

- About 2 meters;
- Roughly;
- Firm (How firm?);
- As soon as possible; and
- Frequently (How frequent?).

10.- Consider material arrival schedule as part of the contract. Identify long lead items and possible vendors in the bid package. Avoid sole-source procurement unless absolutely necessary.

11.- Clearly identify who will be responsible for material delays.

12.- Analyze all potential bidders before preparing a bid slate. Examine contractors' prior contracting experiences, claims history, management capabilities and financial ability.

13.- Carefully analyze contractors' technical proposal paying particular attention to the proposed method of construction and the planned number of manhours claimed necessary to execute the job.

14.- Seriously question contractors' excessively low bidding on :

- Scope of the job;
- Technical requirements;
- Schedules and crew sizes;
- Material suppliers;

15.- If you are forced to live with a 'low-ball' contractor, anticipate a claim and work on it from the beginning :

- Get your law department involved in all transactions;
- Reinforce your cost estimating and planning and scheduling units;
- Alert all members of the project team; and
- Keep extremely tight records especially on progress measurement and quality assurance.

16.- Be reasonable when analyzing contractors' complaints about changes and omissions. Negotiate settlement as soon as possible and keep in mind that the older the issue is the more difficult it will be to settle.

17.- Appreciate the contractors' right to perform the contract in any fashion he deems appropriate, as long as the methods and results conform to contractually specified standards.

18.- Keep in mind that the owner has the obligation to provide:

- A suitable construction site ;
- Accurate plans and specifications;
- Well-defined scope of the job; and
- Inspection without interference.

19.- Understand how many factors can affect a contract and delay and disrupt the work. Cooperate to establish an atmosphere of understanding and mutual respect.

20.- Keep strict control of :

- Progress reports;
- Daily meetings;
- Schedule revisions;
- Cost estimates;
- Change orders and their justification; and
- Correspondence.

21.- Develop a document control plan including provisions for :

- Drafting letters to and from contractors;
- Handling drawing transmittals between design group and contract administrator and between contract administrator and contractor;
- Responding to any query within 3 days, even if only to say "we are working on your query";

- Do not let change orders pile up, deal with schedule extension requests promptly either accepting or denying them so the contractor knows where he stands;
- Producing accurate minutes of all meetings, and having the contractor signature on them;
- Asking at every meeting if there are unresolved claims or delays, or changed work without change orders and documenting the responses;
- Be sure the minutes reflect the problems like lack of manning, lack of productivity, broken-down equipment and the like; and
- Taking job progress photographs, mounting them with accurate captions, and filing them with their corresponding negatives.



Records Management

Good, accurate records are a great help when negotiating changes and claims. This is particularly true for the contractors since they usually have the burden to prove the effect of the issue under dispute.

The records usually needed to substantiate a claim are:

- Progress schedules;
- Daily and weekly reports;
- Change order log;
- Purchase orders and delivery receipts;
- Correspondence from and to the contractor;
- Photographs;
- Job diary;
- Plan and schedule revisions; and
- Minutes of daily and weekly meetings.

Performance is usually documented through a periodic review of the project approved schedule. Updates determine the project status of schedule versus actual performance so anybody can visualize the work completed to date, the rate at which the work was performed, and the costs incurred.

Daily and weekly reports should include:

- Issue date, weather conditions;
- Manpower levels;
- Equipment used and idled;
- Materials utilized and future requirements;
- Subcontractors' performance;
- Details on controversial matters;
- Change- order work status; and
- Safety.

Since change orders are one of the major causes of claims, it is important to maintain good records of them including:

- Initiations;
- Cost and time estimates;
- Approvals;
- Current status;
- Requests for project completion revision; and
- Daily progress.

Keeping the correspondence well organized by subject will provide the means of understanding what happened in an after-the-fact claim and of relating new problems to old ones.

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Project Manager Competency Model

A considerable percentage of today's project managers are what it is popularly called *accidental project managers*. They landed the job as project manager without knowing the demanding complexity of a project environment.

They and their employers are so poorly informed about the scope of project management they do not even have a job description to match project requirements.

Besides being a leader, a project manager should have hands-on experience on nine different project management knowledge areas. It is not enough to know they exist and being able to recite them when requested. Today's project managers have to be fully conversant and experienced on these knowledge areas as a condition sine-qua-non to have a successful project outcome.

Moreover, hiring a project manager requires experienced human relations management people. Project management is a new professional endeavour and as such there are not too many people prepared for the job or to decide on the right person for the job.

Not less impacting is having an additional blind spot on the subject by hiring other key project management team positions.

Cancel this blind spot by following a Project Management Competency Model¹ which identifies observable behaviours grouped into discrete competencies:

Leadership

Competent project managers show leadership by:

- Controlling pressure;
- Establishing and communicating their foresight for the project;
- Making success or failure a team's result;
- Exhibiting positive attitude when problems arrive;
- Leading by example;

¹ IPMA, PMI, SEI, Pendse P., B&M

- Establishing rapport and empathy with the rest of the team; and
- Accepting responsibility for failures.

Customer Relations

Competent project managers cultivate customer relations by:

- Working based on customer feedback on project performance;
- Understanding customer's point of view;
- Loyally representing the customer;
- Communicating other project stakeholders' point of view to the customer;
- Being accessible, available, and responsive to the customer;
- Creating mutual interest in repeat business; and
- Showing ethical behaviour and respect for the customer at all times.

Project Planning

Competent project managers properly develop project planning by:

- Securing clear, complete statements of project scope;
- Developing written plans for all project management endeavors;
- Documenting and distributing the project plan;
- Administering the project plan as needed;
- Having well-defined project cost and duration issues;
- Utilizing state of the art planning tools effectively; and
- Supporting project team members planning efforts.

Performance Measurement

Competent project managers implement good performance measuring by:

- Actively monitoring project status;
- Insisting on constructive analyses of variance;
- Using the plan to manage the project;
- Holding regular status review meetings;
- Encouraging an atmosphere free of surprises;
- Measuring and reporting performance against the plan; and
- Submitting status reports on time.

Communicating

Competent project managers excel on communications by:

- Using clear communication means;
- Matching messages form and timing to the expected audience;
- Implementing professional communications;
- Choosing proper and adequate language;
- Checking on how accurate information sent and received is;
- Explaining things unequivocally; and
- Listening to what others have to say.

Organization Effectiveness

Competent project managers organize effectively by:

- Knowing where to go to for help;
- Gaining approval of requests for support;
- Showing respect for individuals regardless of position;
- Maintaining a network of contacts from whom to get assistance; and
- Managing resources according to their availability and importance.

Team Building

Competent project managers build project teams by:

- Sharing management responsibilities with the team;
- Talking about process as well as results;
- Achieving consensus on all major decisions;
- Drawing attention to team achievements;
- Developing team players; and
- Encouraging teams that perceive themselves as teams.

Staff Development

Competent project managers develop their staff by:

- Insisting on the best that each individual can do;
- Demonstrating knowledge of team members' personal and professional goals;
- Valuing the individual's growth and achievements;
- Giving credit promptly and sincerely;
- Providing constructive criticism promptly and in private;
- Providing timely and useful performance reviews; and
- Delegating according to the professional and the situation.

Perspective

Competent project managers develop a good perspective of the project environment by:

- Getting real: If you're on-site, dress like your colleagues. Eat with them. Joke with them. Make sure your work area and equipment is equivalent to theirs;
- Being willing to learn from your team members, and give them credit for their contributions; and
- Knowing another point of view in the way we know our own; and
- Understanding that project management perception is about changing the way people see things, shifting attitudes and creating recognition;

Negotiating

Competent project managers show proficiency on negotiations by:

- Advocating for interests rather than positions;
- Seeking agreements that satisfy interests of both parties;
- Working to keep personalities out of the negotiations;
- Being open to innovative and creative solutions;
- Using objective criteria to evaluate proposed agreements;
- Negotiating agreements that can be kept; and
- Negotiating agreements that preserve a working relationship.

Risk Management

Competent project managers perform good risk control by:

- Considering both the impact and likelihood of risks;
- Using contingency and management reserves appropriately;
- Distinguishing between risks and problems;
- Taking calculated risks and exploiting unexpected opportunities; and
- Viewing past problems as current risks and planning for them.

Problem Solving

Competent project managers demonstrate good problem solving skills by:

- Using a structured approach to tackle significant problems;
- Looking for root causes, not just symptoms ;
- Requesting and listening to both facts and opinions;
- Encouraging innovative and creative solutions;
- Involving the team in problem solving;
- Asking perceptive questions; and
- Following up to ensure that the problem remains solved.

Decision Making

Competent project managers practice good decision making skills by:

- Using a structured approach for all significant decisions;
- Requesting and listening to both facts and opinions;
- Making timely decisions;
- Documenting decision-making;
- Delegating or escalating decisions as needed; and
- Following up to ensure decision was implemented.

Negotiation Skills Guidance

Introduction

Negotiation is a fact of life. Everyone negotiates something every day.

Any method of negotiation may be judged by three criteria:

1. Should produce wise agreement if it is possible
2. Should be efficient
3. Should improve or at least not damage the relationship between the parties

Negotiation takes place on two levels:

- Addresses the substance; and
- Focuses on the procedure for dealing with the substance.

Negotiations are viewed as **hard** if:

- Participants are adversaries;
- Goal is a victory;
- Concessions are demanded as a condition of the relationship;
- Others are distrust in search of the single answer: *the one you will accept*;
- Becomes a trial to win a contest of wills; and
- Pressure is applied.

Negotiations are viewed as **Soft** if:

- Participants are friends;
- The goal is reaching an agreement;
- Concessions are made to cultivate the relationship;
- People are soft on the other people and the problem;
- Others are trusted;
- Positions are changed easily;
- Offers are made;
- There is a search for the single answer: the one they will accept;
- Insistence on an agreement is pursued;
- A contest of wills is avoided; and
- Parties are willing to yield on pressure.

POSITIONAL NEGOTIATION

With the positional style of negotiation, each party starts with an extreme (usually unjustified) position.

The basis for this approach stems from the belief that the ultimate solution will be favourable only if the initial offer is extreme.

It is seen as a zero-sum game. One party will win and one will lose.

An extreme position increases the chances of a "win, " but the more extreme the opening positions and the smaller the concessions, the more time and effort it will take to come to an agreement.

A typical positional negotiation is likely to conclude after a lengthy exchange of small offers and counteroffers. These small concessions are made to avoid a negotiation impasse.

The process frequently includes theatrics from both parties. Common tactics include foot-dragging, threatening to walk out, and stonewalling.

This time consuming process continues until some constraint compels one or both sides to seek resolution. The differences that were keeping the two parties apart are usually reconciled with major movements. There is then a final series of "split the difference offers with an eventual settlement.

Settlements in positional negotiations come with a steep non- monetary price. Trust falls by the wayside. In addition, the process creates (or perpetuates) an adversarial relationship between the two parties. This arrangement does not bode well for close buyer-supplier relationships, which are crucial for both parties.

Successful companies are placing greater reliance on their suppliers for a technical edge in the market place. This close relationship frequently includes joint strategic planning, simultaneous engineering on new products and processes, continuous quality improvements and better communication. Positional negotiations threaten the success of all these buyer-supplier initiatives.

The narrow focus on tradeoffs and split-the- difference compromises frequently leads to ***suboptimal "Win-Lose" or even "Lose-Lose" solutions.***

Dangers of positional negotiations:**Produces unwise agreements because:**

- Positions are tied to egos;
- Negotiators tend to be locked into positions; and
- As more attention is paid to positions, less attention is devoted to meeting the underlying concerns of the parties.

Arguing over positions is inefficient because:

- It becomes an incentive to stall settlement; and
- Agreement requires concession.

Endangers ongoing relationships:

- Creating contests of will; and
- Anger/resentment may result from concessions required to reach agreement.

Multiple-party negotiation complicates positional bargaining

- Varying positions make common position difficult; and
- Changing position becomes difficult.

Additional method of negotiations – Principled Negotiations**Four Basic points:**

1. Separate people from the problem
2. Focus on interests, not positions
3. Generate a variety of possibilities before deciding what to do
4. Insist that the result be based on some objective standard

Seven Elements:

1. Interests
2. Options
3. Alternatives
4. Legitimacy
5. Communication
6. Relationship
7. Commitment

Principled Negotiation Method

Principled negotiation seeks to establish a climate where parties can be creative in searching for mutually beneficial solutions to a shared problem. This approach preserves, and may even enhance, ongoing relationships.

Principled negotiation seeks a winning outcome for parties by bargaining over the interests of both parties, not on the positions.

It is based on complete and early sharing of information in the belief that "the pie" of options being divided is made larger by understanding what is most important to the other party. Ideally, the negotiation will reveal that both parties can have what they want most, or at least more than they initially thought they'd get (Thompson, 1991).

Separate people from the problem

- Negotiators on both sides of the issue bring emotion, perceptions and values to the negotiations;
- Misunderstandings or personal perceptions of facts of negotiation may lead to reactions that produce counter-reactions usually leading to failure of the negotiation;
- Discussions of substance entangled with emotions over issue;
- Statement may be intended to identify a problem, but it may be perceived as an attack; and
- People draw inferences from comments that become facts about other individual's intentions and attitudes

Perceptions

- Conflict lies in each side's perception of the problem;
- Ability to see the situation as the other side sees it is one of the most important skills a negotiation can possess;
- Understanding other side's positions does not mean agreeing with it;
- One way to deal with differing perceptions is to make them explicit and discuss them;
- Look for opportunities to act inconsistently with other side's perceptions, this may lead to change of perception; and
- Allow face-saving reconciling and agreement with principle and self-image of the negotiators.

Emotions

- Recognize and understand emotions, not only yours, but theirs;
- Identify the source of emotions;
- Make emotions explicit and acknowledge them as legitimate;
- Allow the other party to let off steam;
- Listen without responding;
- Do not react to emotional outburst;
- Use symbolic gestures;
- Apology can defuse emotions; and
- Even when personal responsibility is not acknowledged.

Communication

Three problems

1. Negotiators may not be talking to each other.
2. Other side may not be hearing you.
3. Misunderstanding.

Solutions

1. Listen actively
2. Acknowledge the other party saying
3. Talk, do not debate
4. Speak about yourself, not about them
5. Speak with a purpose

Focus on interests, not positions

- Interests define the problem;
- Identify the relevant parties;
- Whose decision do I want to affect?
- Look for the interests behind the position;
- Why does party hold that position?
- Ask why not? Why has not the other side taken the action you desire?
- Look for conflicting as well as shared interests;
- Each side has multiple interests;
- Prioritize your interest, consider the other side's priorities too;
- The most powerful interests are basic human needs;
- Negotiations are not likely to make progress if one side believes basic human needs are threatened;

- Help the other side understand how important and legitimate your interests are;
- Be specific;
- Set forth the seriousness of your concerns, without implying other side's interests are unimportant;
- Acknowledge their interests as part of the problem;
- Demonstrate understanding of their interests;
- Highlight shared interests;
- Be concrete, yet flexible;
- While not tied to a position, you must be committed to the interests; and
- Remain flexible to solutions that satisfies interests.

Invent options for mutual gain

Four major obstacles inhibiting invention of options:

1. Premature judgment
2. Searching for the single answer
3. Assumption of a fixed pie
4. Thinking that solving the problem is their problem

Four basic steps for inventing options

1. Define the problem
2. Analysis, diagnose causes of the problem
3. Approaches, what are the possible strategies?
4. Action ideas

Inventing creative options

Separate act of inventing options from the act of judging them

Brainstorming

- Define the purpose;
- Choose a few participants; and
- Clarify ground rules including a no criticism rule.

Post-brainstorming

- Identify most promising ideas;
- Invent improvement of promising ideas; and
- Evaluate ideas and decide.

Broaden options on the table rather than looking for a single answer

- Examine problem from view of different professionals and disciplines;
- Invent agreements of different strengths; and
- Change Scope of proposed agreement.

Look for mutual gain

- Identify shared interests;
- Shared interests lie latent in every negotiation;
- Shared interests are opportunities; and
- Stressing shared interests can make the negotiation smoother.

Dovetail differing interest

- Different beliefs?
- Different values placed on time?
- Differing Forecasts?
- Differences in aversion to risk?

Make their decision easy

- Without some option that appeals to other side there will be no agreement; and
- Option must be viewed as legitimate.

Insist on using objective criteria

How you develop an objective criteria?

- Using a fair standard for the substantive question; or
- Using a fair procedure for resolving conflicting interests.

Alternatives

Alternatives are other ways of satisfying interests

Best Alternative to a Negotiated Agreement (BATNA)

- It is absolutely essential to know whether to accept alternatives arrived at through negotiation versus ending negotiation;
- Must consider other side BATNA as well as your own;

Develop your BATNA by:

- Inventing a list of possible actions if there is no agreement;
- Improving some of the ideas from the list and creating practical alternatives; and
- Selecting the alternatives that seem to be the best.

Strengthen your BATNA by:

- Make it easier, more probable or better at satisfying interests; and
- If you only accept a deal that is better than BATNA, improving it leads to better results.

Consider their BATNA

- It will make it easier for you to negotiate; and
- Knowing it, you will realize the probabilities of reaching an agreement.

Reservation value: Translation of the BATNA into a value at the table, an amount at which you are indifferent between reaching a deal and walking away to your BATNA

Zone of Possible Agreement (ZOPA): the bargaining range created by two reservation values The ZOPA defines a surplus that must be divided between the parties

GETTING INTO AGREEMENT

When the other side will not play–hardball negotiator or positional one insistent on asserting position only.

The goal is to focus the negotiator on merits (away from position), 3 approaches:

- Continue to focus on merit, rather than position;
- Counter positional bargaining to direct attention to merits – jujitsu negotiation; and
- Include a third party to focus the discussion.

Jujitsu Negotiation

Typically positional bargainer will use 3 maneuvers:

- Forcefully assert positions;
- Attack ideas; and
- Attack negotiator.

When positional bargainer asserts position, look behind the position to identify interests.

When positional bargainer attacks your ideas, invite criticism and advice

- Use their negative judgments to find out their underlying interests and improve from their point of view; and
- Channel criticism in a constructive direction by turning the situation around and asking the opponent's advice – "what would you do in this situation?"

Recast attacks on you as an attack on the problem

- ***Resist temptation to defend or counter-attack; and***
- ***Allow opponent to let off steam, acknowledge understanding their point, recast as an attack on the problem.***

Two key tools:

- Use questions instead of statements; and
- Questions offer no position to attack.

Questions do not criticize, they educate

Use silence

- People tend to feel uncomfortable with silence, especially when they have doubts of the merit of their position; and
- Silence creates the impression of a stalemate which the other side may feel compelled to break with a statement or suggestion.

Using a third party –the one-text procedure

- A third party explores interests of each party;
- Third party devises draft solution;
- Draft solution is presented to each party – each party offers criticism of draft;
- Third revises draft until reaching final version;
- Third party offers final version to each party requesting a yes or a no; and

- One-text procedure is very useful in multi-party negotiations to garner mutual agreement.

Tactics – Changing the Game

Recognizing hard bargaining tactics

- Extreme claims followed by slow concessions;
- Most common of hard bargaining tactics;
- Tactical advantage including influencing opponents settlement valuation range;
- Tactical disadvantage – brings about risk of no settlement;
- Commitment Tactics;
- One party persuades the other that there is no freedom of choice with respect to a particular issue;
- If both parties are locked in with no freedom on either side, there will not be a chance for a deal; and
- Perception of predetermine commitment damages relationships between parties.

Take it or leave it offers

- One party threatens to end negotiation if offer is not accepted;
- Boulwarism - no haggling; (**Boulwarism** is a negotiation tactic named after [General Electric's](#) former vice president [Lemuel Boulware](#), who pioneered the strategy.)
- Exploding offer – take it today or it is gone; and
- Risk – if both sides play, no deal.

Changing the game

- Stay with your game – do not let hard-bargainer inhibit you from staying focus on your interests;
- Name the game;
- Share your perceptions of what the other party is doing. “You are essentially saying, take it or leave it.”
- Show that you can play the same game. “I could report that my client insists on a certain provision.... We can both dig in and play chicken to see who blinks first”
- Initiate a conversation about another process that might work better from the perspective of both parties. “Instead, I think our shared problem is What can we do to set up a process to solve this mutual problem?”

Change Players

- Change the players by removing certain parties (attorney, negotiator); or
- Add a neutral party to assist.

Getting Passed “NO” is another strategy for getting to a mutually satisfactory agreement.

Five steps to a “Breakthrough Strategy”

- *Go to the Balcony;*
- *Step to their Side;*
- *Reframe;*
- *Build them a golden bridge; and*
- *Do not escalate – Use power to educate.*

Go to the Balcony

Suspend natural reactions – three common reactions:

- Striking back;
- Giving in; and
- Breaking off.

Going to the balcony means distancing from your natural impulses and emotions – this will keep you focus on the ultimate goal – a deal that is better than your BATNA

- Some Tactics;
- Recognize the tactic
- Know your buttons;
- Pause and Say Nothing;
- Rewind the tape;
- Take a time out; and
- Do not make important decisions on the spot.

Step to their Side

Stepping to their side means doing 3 things:

- Listen to what the other party has to say;
- Acknowledge their point, their feelings and their competence and status;
- Agree with them whenever possible;
- Listen Actively;
- Listening may be the cheapest concession you can make;
- Listening requires patience and self-discipline;
- It is not enough just to listen, you must communicate that you have heard what the other said – do this by paraphrasing and asking for corrections;
- Acknowledge their point;
- Acknowledging does not mean agreeing with the other party's point;
- Acknowledging means that you view the other side's point as one valid point of view among others;
- Acknowledge their feelings;
- Behind an opponent's positions often lie emotions;
- Caution an insincere acknowledgment is easy to spot. Body language and tone count just as much as words;
- Offer an apology when necessary;
- Agree whenever you can;
- Agree without conceding;
- Accumulate yeses;
- Changes relationship between the parties; and
- Each yes reduces tension.

Reframe

- Reframing works because every message is subject to interpretation;
- You have the power of positive perception – the ability to put a problem-solving frame around whatever the other side says;
- Reframing Techniques;
 - Ask problem solving questions – “why?”; “why not?”; “what if?”
 - Ask for the other party's advice;
 - Ask “what makes that fair”
 - Use open-ended questions;
 - Tap the power of silence;
 - Deflect attacks by changing it to an attack on the problem; and
 - Expose tricks

Build them the Golden Bridge

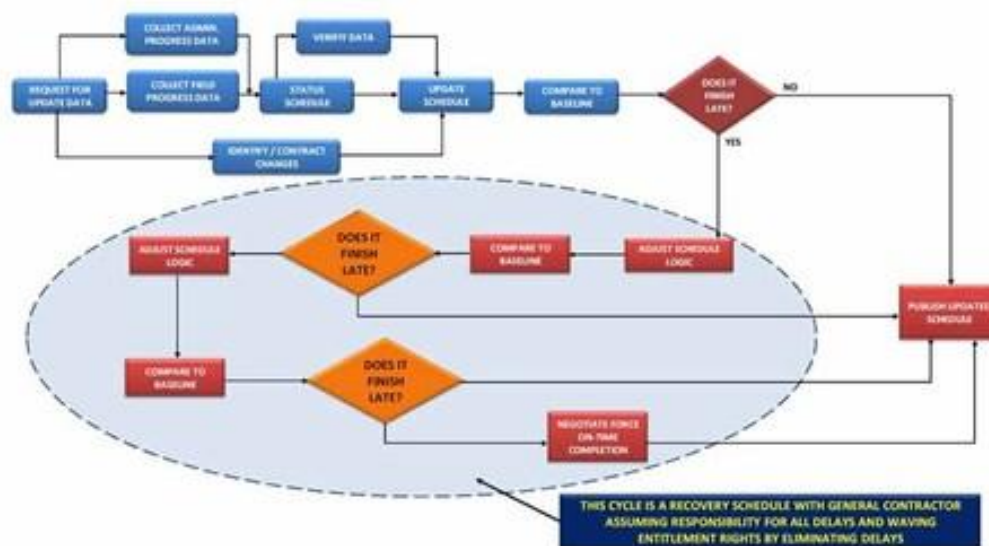
- Instead of pushing the other side toward an agreement, you need to reframe a retreat from their position as an advance toward a better solution;
- Start where the other side is in order to guide them toward eventual agreement;
- Building a golden bridge makes it easier for the other side to surmount the four common obstacles to agreement:
 - Not their idea;
 - Unmet interests;
 - Fear of losing face; and
 - Too much, too fast.
- Involve the other side;
- Ask for and build on the other side's ideas;
- Ask for constructive criticism;
- Offer them a choice;
- Satisfy unmet needs;
- Resistance often stems from unmet needs;
- Do not dismiss needs as irrational;
- Do not overlook basic human needs;
- Do not assume a fixed pie;
- Look for low-cost, high-benefit trades;
- Use an if-them formula;
- Help the other side save face;
- Help them back away without backing down;
- Show how circumstances have changed;
- Ask for third party recommendation;
- Point to a standard of fairness; and
- Do not rush to the finish.

Do not escalate: Use power to educate

- Often, when negotiations are frustrating, parties switch from problems solving game to a power game;
- Use power to educate that only way for them to win is for both sides to win;
- Let them know the consequences;
- Ask reality-testing questions such as:
 - “what do you think will happen if we do not agree?”
 - “what do you think I will do?”
 - “What will you do?”
- Warn, do not threaten;
- Demonstrate your BATNA; and
- Remind opponent of the Golden Bridge.

Forge a lasting agreement

- Do not ignore implementation;
- Design deal to minimize risks; and
- Build in dispute resolution procedures.



CONTRACTING PRINCIPLES

Site Engineer's Obligations

A site engineer on a typical project is wearing several hats. First and foremost, he is functioning as an independent professional and he is providing services for a fee. He also functions as an agent of the owner and as an arbitrator of disputes between the owner and the contractor.

Standard of Care

The engineer's obligation is to exercise the degree of care, skill, and knowledge that is generally expected within the profession. It is the same standard applied to doctors, lawyers, and other providers of professional services.

A site engineer's service or advice need not reflect superlative brilliance in the field, but it must meet a certain minimum level of expertise that is vaguely defined as "acceptable" or "average." When performing design calculations, for instance, the engineer must follow certain procedures that are generally accepted in the profession. The failure to do so will probably be considered negligence or professional malpractice.

It is important to note that an engineer who holds himself or herself out as possessing particular expertise in a field will be held to a standard of care applied to such experts. For instance, if a civil engineer takes it upon himself or herself to evaluate subsurface data or perform structural calculations, the civil engineer will be expected to possess and exercise the same degree of care, skill, and knowledge expected of a geotechnical engineer or a structural engineer. Once an engineer undertakes a particular endeavor, it is no excuse to later argue this was really outside the his field of expertise. This explains the widespread use of technical consultants and subcontractors.

Over the years, a few court decisions have held that an engineer extends an implied warranty that its design documents are complete and accurate and suitable for their intended purpose. Although doctors and lawyers have never been asked to warrant the successful outcome of their services, some courts have reasoned that the design professions are more empirical and more subject to perfection.

These court decisions have been greeted with alarm in the design professions. It must be stressed, however, that these decisions are anomalies. They do not represent the mainstream of judicial thinking regarding the engineer's standard of care. In the absence of contractually assumed liability, which is discussed below, the engineer is held only to a

standard of due care and that standard is measured by the skills and knowledge of the average practitioner.

CASE STUDY

Owner awarded Contractor a contract for construction of a sewer project. The contract stated that neither Owner nor Engineer assumed responsibility for Contractor's ability to meet the specified infiltration limits and if Contractor felt the design was inadequate to meet the limits, Contractor must notify Engineer in writing.

Contractor was unable to meet the infiltration limits. Contractor sued Owner for breach of implied warranty of the specifications and sued Engineer for negligent preparation of the specifications. Defendants relied on the disclaimer in the construction contract.

The Appellate Court ruled that all owners extend an implied warranty to contractors that the plans and specifications are accurate, complete, and suitable for the completion of the project. The engineer in turn assumes a duty to prepare design documents that meet this standard.

*These fundamental obligations cannot be disclaimed or shifted to the contractor. The language in the contract was unenforceable. **W.H. Lyman Construction Co. v. Village of Gurnee. 403 N.E.2d 1325 (Ill.App. 1994).***

Engineer's Contractual Obligations

In addition to the engineer's general obligation to exercise due care, he has a number of specific contractual obligations established in its agreement with the project owner. An architectural or engineering services agreement bears little resemblance to a construction contract.

To begin with, it is always negotiated, not competitively bid. Additionally, there are not a large number of contingencies that need to be addressed in a construction contract. A typical engineer agreement addresses the basic issues of fee, schedule, insurance and use of consultants. The agreement then devotes most of its space to defining the scope of the engineer's work.

As mentioned earlier, the definition of the scope of work is crucial in defining the engineer's contractual obligations. Without a detailed, complete, and understandable scope of work, it is impossible to determine where the engineer's responsibilities began and where they ended. It is also impossible to identify and recover payment for extra work items not included in the original scope.

Most engineers use a standard, preprinted form of agreement for their contracts with project owners. This may be a form prepared by their attorney for their use, or it may be one of the forms published by the professional organizations. Both the American Institute of Architects and the Engineers' Joint Contract Documents Committee publish such forms.

These forms have been officially approved by their respective organizations, and they avoid the serious pitfalls of engineer agreements that are described below.

There are two serious pitfalls that should be avoided by engineers when entering into agreements with project owners. They are two forms of contractually assumed liability: warranties and indemnification clauses.

As described earlier, courts have refused to read an implied warranty into an engineer's agreement. The engineer has a duty to exercise due care in carrying out his or her professional responsibilities, but the engineer does not impliedly warrant to the owner that the work product is flawless or will accomplish everything the owner wanted the engineer to.

CASE STUDY

Owner retained Engineer to design wastewater treatment plant. Engineer based design on use of cement-bentonite slurry wall. Engineer relied on Supplier's representations regarding the compressive strength of the product and conducted no independent investigation into the properties of the product.

The wall failed and caused extensive damage to the treatment plant. Owner sued engineer for professional malpractice.

The District Court ruled that Engineer failed to exercise the skill and judgment expected of a design professional.

An engineer does not guarantee the sufficiency of his design. Nor is an engineer expected to conduct an extensive independent testing program on every product he specifies.

*It was negligent, however, for this engineer to blindly rely on Supplier's representations without checking some independent verification. **City of Columbus v. Clark-Dietz & Associates—Engineers, Inc.**, 550 F.Supp. 610 (N.D.Miss. 1989).*

Even though courts have refused to find an implied warranty, it is still possible for the engineer to extend an express, or written, warranty to the owner. This is seldom labeled as a warranty in the engineer services agreement, but it occurs nonetheless. For instance, the designer of an industrial facility may be asked to guarantee that the facility as designed will be capable of meeting certain performance standards. This would be considered an express warranty.

The problem with warranties is twofold. First of all, an engineer may exercise due care and even professional excellence at all times, and still have a project fall short of expectations because of variables beyond the engineer's control. With a warranty, the engineer is liable nonetheless, and this greatly expands the engineer's liability exposure.

The second problem with warranties is insurance coverage. There simply isn't any. The insurance companies who write 'errors and omissions' or professional malpractice policies for engineers are alarmed at any contractually assumed liability. They are only willing to cover the risk that the engineer will fail to meet the required professional standards. The policies invariably exclude coverage for liability resulting from warranties. It is therefore in the best interest of the owner and engineer that warranties be kept out of the agreement.

The second form of contractually assumed liability is the indemnification clause. Again, the problems are the expansion of liability exposure and the lack of insurance coverage.

An agreement to indemnify another party is an agreement to protect them, pay them, and otherwise make them whole in the event a claim is asserted against them. To the extent the indemnification clause is limited to claims against the owner arising solely out of the engineer's negligence, this is not a problem, as the engineer would be liable for its negligence anyway.

The problem is that indemnification clauses are frequently written in such a way that the engineer's liability is contractually expanded to include claims not arising out of its own negligence. The most common example is the indemnification clause referring to claims arising "in whole or in part" from the engineer's services. In other words, the engineer may be 10 percent responsible for the problem, but it has agreed to fully compensate the project owner.

As with express warranties, insurance companies are not willing to cover expanded liability resulting from indemnification clauses. There are almost always exclusions in the insurance contracts, although these exclusions can sometimes be removed or reduced through the purchase of indemnification riders.

While on the subject of contractually assumed liability, there is one other topic which should be addressed. This is the engineer's effort to contractually limit its liability for its own negligence.

These “limitation of liability clauses” typically state that the engineer’s liability to the owner shall not, under any circumstances, exceed a certain stated amount. The use of these clauses, which are legally enforceable, has been pushed by some engineer insurance carriers and professional associations.

Just as engineers and their insurers have been reluctant to agree to a contractual expansion of engineer liability, project owners have been reluctant to agree to the contractual limitation of the engineer’s traditional liability. It is fair to say that the use of limitation of liability clauses is not gaining widespread acceptance in the industry.I’’

Sufficiency of the Plans and Specifications

Probably the single most important obligation the engineer has toward the project owner is the obligation to prepare a complete, accurate, and unambiguous set of plans and specifications.

It was stated earlier that implied warranties are not read into engineer service agreements. It is so well established, however, that an engineer has a professional obligation to produce sufficient plans and specifications that it almost rises to the level of an implied warranty.

The plans and specifications should not omit anything that is necessary or include anything that is redundant. They should be free of conflicts and ambiguities. They should be accurate regarding existing site conditions. And it should be possible to construct the project as designed using commercially acceptable construction methods in order to end up with a functioning facility.

As will be seen later, the sufficiency of the plans and specifications is crucial regarding the engineer’s liability to the owner, the owner’s liability to construction contractors, and the engineer’s liability to construction contractors.

Liability for Cost Estimates

It is common, at the planning stage of a project, for the owner to tell the engineer that there is a certain maximum budget for the project. This is obviously a crucial consideration throughout the design phase of the project. The engineer must estimate the construction cost of the facility he or she is designing. This is difficult, because it involves assessing such intangibles as the local competitive bidding climate.

The question arises, what happens when all the bids or quotations come in and the project, as designed, is over its budget? What are the engineer’s responsibilities in this situation?

To begin with, the engineer is expected to use ordinary professional skill in estimating construction costs but is not expected to predict costs with dead accuracy. It is unusual for a construction cost overrun to be successfully asserted as a malpractice claim against an engineer.

Most engineer service agreements address this issue. Typically, they state that the engineers sole responsibility if bids come in over budget is to provide redesign' work at no additional charge in order to bring the project within budget. The engineer cannot be held liable for monetary damages.

Sometimes the agreement will state that the engineer's obligation to provide free redesign services will accrue only if the low responsive, responsible bid exceeds the budget by a certain stated percent. In any event, the engineer's obligations in this situation should be expressly established in the engineer service agreement.

Engineer's Liability to Third Parties

Traditionally, the engineer's only responsibilities were owed to the project owner, the client with whom the engineer did business. Evolving legal trends have changed all that. Along with every other participant in our economy, the engineer now finds itself exposed to liability to third parties with whom the engineer never did business.

The Demise of "Privity"

"Privity of contract" means that a direct contractual relationship exists between two parties. They have entered into an agreement.

Traditionally, the law held that an engineer could not be sued by a construction contractor or any other third party not in privity with the engineer. The engineer's professional obligations were owed strictly to its client, the project owner. It was the owner that the engineer contracted with and the owner who paid the engineer. Therefore, the engineer need consider only the interests of the project owner.

The past 40 years have seen the near total demise of privity as a requirement for maintaining a lawsuit for commercial damages. The trend began in the context of product liability litigation and spread to every area of law including engineer liability.

Today, it is safe to say that the lack of privity of contract will rarely protect an engineer in a suit alleging the negligence or professional malpractice of the engineer. As a result, engineers are being sued by contractors, subcontractors, bonding companies, construction lenders, and other parties on the construction project with whom the engineer has no contractual relationship.

Foreseeable Harm

With the demise of privity the new operative phrase is "foreseeable harm." Today's rule can be summarized as follows: In carrying out its professional responsibilities, the engineer has a duty to exercise ordinary skill and due care. That duty is owed to all parties who could foreseeably suffer economic harm as a result of the engineer's failure to exercise due care. If one of those parties is harmed as a result of the engineer's lack of due care, that party may maintain an action against the engineer for negligence.

CASE STUDY

A Mechanical Engineer prepared drawings pursuant to agreement with Owner. Contractor later complained that the drawings were inaccurate and sued Engineer for the increased cost of performing the construction work.

Engineer responded that its only obligation was to its client, the Owner. Engineer said it had no contract, and therefore no legal obligations, with regard to Contractor.

*The Superior Court ruled that Contractor could sue Engineer for its increased costs. Privity of contract is no longer required in order to maintain a suit of this nature. Engineers may be held liable to any party for the economic consequences of their professional negligence if it was reasonably foreseeable that the injured party would be affected by the engineer's performance of its professional duties. **Conforti & Eisele, Inc. v. John C. Morris Associates, 418 A.2d 1290 (N.J.Super. 1992).***

Common Contractual Claims against engineers

The most common source of third-party claims against engineers is the engineer's inspection and certification role in the construction process. This is discussed in detail below. The other two common sources of third-party claims are design deficiencies and delayed response to request or submittals.

Design deficiencies would include inaccuracies or conflicts in the plans and specifications, as well as any insufficiencies in the design documents. The plans and specifications must be complete and sufficient so that if they are adhered to by a construction contractor, a complete, operational project will result.

Contractors are entitled to rely on the plans and specifications when bidding and planning a job. To the extent design deficiencies increase the cost of the contractor's performance, the engineer may well be held liable to the contractor.

An engineer's delayed response to requests or submittals is another source of claims by contractors. When a contractor seeks clarification or direction from the engineer when faced with an unanticipated problem, the engineer has an implied obligation to respond within a reasonable period of time. If the engineer does not and the lack of a response delays the contractor or extends its total performance time, the engineer may be held liable to the contractor for its delay damages.

Submittals typically involve product catalogs, shop drawings, and other things that must be approved by the engineer before the contractor incorporates them into the project. Sometimes the construction contract stipulates that these documents will be turned around in a certain minimum time. Even if the contract contains no such provision, there is an implied obligation for the engineer to make a decision within a reasonable period of time.

Prompt decisions on these matters are frequently crucial to the contractor's ability to maintain its schedule.

CASE STUDY

Engineer prepared plans and specifications for wastewater treatment plant pursuant to agreement with Owner. The specifications required certain internal components in the sludge pumps.

Contractor prepared its bid in reliance to a quotation from Supplier. Engineer refused to accept the particular model pump being offered. Supplier had to furnish Contractor with a more expensive pump in order to obtain Engineer's approval. Supplier then sued Engineer for the increased cost, arguing that Engineer had negligently drafted and incorrectly interpreted the specification. Engineer responded that it owed no duty to an equipment supplier.

The Court of Appeals ruled that Engineer did owe Supplier a duty to exercise due care in the drafting and interpretation of specifications. An engineer's obligation to exercise appropriate professional skill and judgment extends to all parties who may foreseeably rely on the engineer's services. Waldor Pump & Equipment Co. v. Orr-Schelen-Mayeron & Associates, Inc., 386 N.W.2d 375 (Minn.App. 1996).

Engineer's Inspection Responsibilities

During the construction phase of a project, it is common for the engineer to inspect the contractor's work on behalf of the project owner. This gives rise to questions regarding the scope of the engineer's inspection responsibilities and the engineer's liability for shortcomings in carrying out those responsibilities.

Scope of Responsibility

The scope of the engineers inspection responsibilities is primarily established in the written agreement between the engineer and the project owner. A very precise and well-considered scope of work is therefore necessary in order to avoid misunderstanding on the owner's part and unintended liability exposure on the engineer's part.

Very few owners are willing to pay an engineer to station personnel at the job site 50 or 60 hours a week to observe every move of the contractor. Nor are owners willing to pay to have every piece of material used by the contractor laboratory-tested.

Most owners are seeking periodic inspection of the work. The owner-engineer agreement should reflect this. The scope of work should be explicit as to how many times a week or a month the engineer is expected to visit the site.

If particular materials or installations are to be tested, this should be clearly spelled out. The agreement should then make it clear that the engineer's inspection and testing responsibilities do not extend beyond those specifically listed and the engineer does not guarantee the sufficiency of the contractor's work.

CASE STUDY

Contractor awarded purchase order to Fabricator for exterior metal stairway. Fabricator submitted shop drawings to Contractor, who in turn submitted the drawings to Architect for approval. Architect was slow reviewing the shop drawings. The delay increased Fabricator's costs. Fabricator sued Architect for unreasonably withholding approval of the shop drawings. Architect argued that its only duty in reviewing shop drawings was to protect the interests of its client, the Owner.

*The Court of Appeal disagreed. It was foreseeable that subcontractors such as Fabricator would be economically affected by Architect's performance of its functions. Architect therefore owed a duty to those parties to exercise due care in carrying out its responsibilities. **Gurtler, Hebert & Co., Inc. v. Weyland Machine Shop, Inc.. 405 So.2d 660 (La.App. 1991).***

In recent years, a somewhat semantical debate has arisen regarding the use of the term "monitoring" rather than "inspection." The rationale is that if an engineer "inspects" the work, the engineer will be liable for failing to detect problems, whereas if the engineer only "monitors" the work, it will be held to a lower standard of observation.

This distinction has its genesis in several arcane court decisions, but it is generally lacking in validity. It is unlikely that a modern court would allow the question of an engineer's liability to turn on the use of the verb "inspect" rather than "monitor."

There is certainly no harm in the cautionary use of the term "monitor." Many engineers influenced by their liability insurers, have become more comfortable with this parlance. This is fine, but engineers should not be lulled into believing that the use of the term "monitor" will excuse the failure to meet professionally accepted standards or otherwise lessen their obligations.

Even if the owner-engineer agreement calls for the engineer to monitor the contractor's work, the engineer will still be required to authorize release of payments and acceptance of the work. This authorization requires an affirmative determination on the part of the engineer. The engineer will not be able to hide behind the somewhat passive connotations in the term "monitor."

CASE STUDY

Owner awarded architectural agreement to Architect using the AIA Standard Form of Agreement between Owner and Architect. Architect prepared specifications requiring liquid mortar to be poured in a particular fashion.

Contractor had trouble with the pours and poured mortar in a manner that deviated from the specifications. Architect observed these pours but did not object. When the walls developed problems. Owner sued Architect for failing to inspect Contractor's work in the manner required by the AIA architectural agreement.

The Supreme Court noted that the AIA agreement does not require the architect to make continuous or exhaustive inspections and does not make the architect the guarantor of the contractor's compliance with the plans and specifications. However, the agreement does require the architect to "guard the owner against defects and deficiencies in the work." If Architect observed nonconforming work being performed and failed to object, Architect breached its inspection duties under the agreement. **Dan Cowling & Associates, Lnc. v. Board of Education of Clinton District School, 618 S.W.2d 158 (Arkansas 1981).**

Engineers who are concerned about the liability exposure arising from construction phase activities should focus their attention on the preparation of a detailed, explicit scope of work in the owner-engineer agreement. This is the best precaution to take against expansive liability exposure.



Conformance with Plans and Specifications

One of the engineer's primary inspection responsibilities is to determine whether the contractor is conforming to the plans and specifications for the project. The owner is entitled to strict conformance with the plans. This is what the owner is paying the contractor for. If the contractor is deviating from the plans and specs, it is important for the owner to know so that the owner may take protective measures such as withholding payment.

When inspecting the contractor's work for conformance to the plans and specifications, the engineer is expected to use the skill and care generally accepted within the profession. The engineer is not expected to perform material tests or take other elaborate measures unless this is called for in the agreement with the owner.

There are two common pitfalls for engineers when inspecting the work. The first is a lack of familiarity with the contract requirements. This is particularly inexcusable, as the engineers usually have prepared the plans and specifications themselves. If the architect is not thoroughly familiar with the detailed requirements of the construction contract, it will be impossible for the engineer to determine whether the contractor is conforming to those requirements.

The second pitfall is the failure to inspect work before it is covered up. Most construction contracts prohibit the contractor from covering up work before the owner or his representative has inspected it. Engineers must be alert to strictly enforce this provision. It is impossible for an engineer to reach a responsible professional opinion regarding the sufficiency of the work if the work is now under 4 feet of backfill or concealed by a new wall.

Frequently, the plans and specifications require a certain amount of interpretation. Plans that require a great deal of interpretation are probably sloppy or incomplete. Nonetheless, it is inevitable that questions will arise regarding the intended meaning of the plans and specs or their application to particular field conditions.

In rendering these interpretations, the engineer is expected to be objective and to avoid an expansive reading of the contract requirements.

Because plans and specifications require a certain amount of interpretation, it is customary for the owner to hire the same engineer who designed the project to perform construction phase activities. The rationale is that the designer is in the best position to interpret the design and judge the contractor's conformance to that design.

Some large institutional project owners prefer to hire a separate engineer for construction phase activities. The concern is that the engineer who designed the project will have a vested interest in defending the adequacy and integrity of the design. If there are problems with the design, the engineer will not be objective in arriving at an appropriate solution.

Still, the prevailing practice is for the project owner to hire the designer to inspect the contractor's work.

Occasionally, matters of artistic interpretation arise during construction. For instance, this could involve the approval of a particular shade of paint. Construction contracts typically give the architect broad discretion to make these determinations.

Engineers should not confuse the unfettered discretion they have in making artistic determinations with their role in interpreting the plans and specifications. Properly prepared design documents should speak for themselves and require a minimum of elaboration. The engineer's inspection responsibility is to render an opinion regarding the contractor's conformance with those objective requirements. The engineer is not allowed to embellish the design as the work progresses.

A final issue involving conformance with the design has to do with the engineer's approval of shop drawings and other submittals. Shop drawings are drawings submitted by construction contractors to project owners depicting the way certain aspects of the work are to be performed. Shop drawings typically address such matters as the fabrication or assembly of a particular item or the form and fit of a particular aspect of the work.

Shop drawings are necessary, particularly on large or complex construction projects. It is impossible for even the most complete set of plans and specifications to depict every detail of every installation throughout the project. Furthermore, there are certain aspects of the work where the owner and engineer look to the contractor to provide expertise in fabrication or installation of an item or even selection of a particular proprietary product.

In reviewing and approving shop drawing submittals or submittals proposing the use of a particular product, the engineer should be guided by a desire for conformance with the expressed intentions of the plans and specifications. This is what the architect's approval of a shop drawing submittal indicates. The work as depicted in that drawing will conform to the plans and specifications.

Much has been made of the choice of language used in approving shop drawings. Engineers are concerned that when approving shop drawings, they will inadvertently waive or alter contract requirements, thereby exposing themselves to a liability claim by the project owner. They therefore use very equivocal, noncommittal language in "approving" shop drawing submittals.

One typical statement, found on a stamp affixed to a shop drawing submittal, reads as follows: ***"Review is only to check for compliance with the design concept of the project. Approval does not indicate the waiver of any contract requirement. Changes in the work may be authorized only by written change order."***

The use of this language does little to protect the engineer, but a great deal to create confusion. Under the terms of the typical contract documents, the contractor cannot proceed with the work until it receives approval of submittals. Either the submittal was approved or it wasn't approved. Once it was approved, contractors are entitled to act in reliance on that approval.

Courts are not sympathetic to an engineer's after-the-fact, self-serving explanation of what he or she really meant to say when he or she approved a shop drawing submittal.

Engineers who are concerned about inadvertently waiving contract requirements can take solace from one basic legal principle. If a contractor submits a drawing which entails any deviation from the plans and specifications, this deviations must be prominently noted on the drawing itself. If the drawing involves a change which the contractor fails to flag, the engineer's approval of the drawing will not constitute a waiver of the contract requirements.

Contractor's Percentage of Completion

Another of the important inspection functions of the engineer during the construction phase of the project is to determine the amount of progress the contractor has made. This is crucial, as it relates to the owner's release of payment to the contractor.

Most construction contracts call for periodic progress payments from the owner to the contractor. Typically, payment is to be made based on the contractor's percentage of completion, as measured by the value of the work. For instance, if the total contract price is \$1 million and the contractor has completed work at the site with a value of \$150,000, the contractor is entitled to be paid the \$150,000 less the stipulated "retainage" (usually 10 percent). The job would be said to be 15 percent complete.

It should be apparent that the determination of percentage of completion involves a fair amount of subjective judgment on the part of the engineer. Additionally, the architect is subject to conflicting pressures from the owner, who wants to make sure the contractor is not receiving advance payment for work not yet performed, and the contractor, who is hungry for maximum cash flow. It is far easier for the engineer on a unit-price contract, where an objective measurement of quantity or number of items can be applied.

When determining percentage of completion, engineers should rely on any schedule of values established in the contract between the owner and the contractor. Progress payment issue is a very good reason to insist that a schedule of values be agreed upon in advance. Without such a schedule, the engineer must apply its subjective judgment to a matter that is fraught with potential litigation.

The legal ramifications of an engineer's authorization of release of a progress payment are significant. If the engineer fails to exercise due care in determining the Contractor's percentage of completion and the contractor is paid in excess of the value of the work in place, the engineer could be held liable.

If the overpaid contractor becomes insolvent or disappears, the engineer could be held liable to the owner, the owner's construction lender, and the contractor's bonding company. It was foreseeable that all these parties would rely on engineer's determination to avoid overpayment. And all these parties would foreseeably be harmed if the contractor was overpaid and then defaulted. Funds exceeding the value of the work in place would have been irretrievably disbursed. The engineer could be held liable for the difference between the value of the work in place and the total payments to the contractor authorized by the engineer.

CASE STUDY

Owner awarded Contractor a lump-sum construction contract. Contract called for Owner to make monthly progress payments to Contractor based on Architect's certification of Contractor's percentage of completion. Architect certified a particular percentage of completion, but Owner refused to make a progress payment for that amount unless certain changes were made in the terms of the contract. Contractor sued Owner for breach of contract.

*The Court of Appeals ruled that Owner did breach the contract. When a contract establishes Architect as the party responsible for determining Contractor's percentage of completions that determination is binding on both Owner and Architect. Owner was not entitled to ignore Architect's certification or to impose additional preconditions before making the progress payment. **Hart and Son Hauling, Inc. v. MacHaffie, 706 S.W.2d 586 (Mo.App. 1996).***



Certification of Completion

The conclusion of a construction project is marked by two significant milestones: substantial completion and final acceptance. Each carries certain legal ramifications.

When the contractor has achieved substantial completion of the project, the project is suitable for its intended purpose. The project owner can take occupancy of the project and make use of the project. The risk of loss due to casualty is shifted from the contractor to the owner. Typically, the contractor is entitled to receive payment of the contract balance except for enough retainage to cover the cost of any “punch list,” or last-minute completion items.

Once the punch list is completed by the contractor, the owner is ready to finally accept the project. The contractor is paid the remaining contract balance. Upon final acceptance and final payment, the owner waives the right to bring any claims against the owner for defective work unless the defective work was “latent,” or hidden, or was covered by a warranty. Conversely, the contractor loses the right to assert any claim for additional compensation if it was not asserted prior to final acceptance and payment.

Not surprisingly, it is the engineer who is called upon to certify that the contractor has achieved substantial completion or final completion of the project. This certification typically is issued to the project owner. It is also common, however, for the engineer to certify to public authorities such as a building inspector that a project is substantially complete in accordance with the plans and specifications and the applicable building codes.

If construction defects are discovered after the engineer’s certification of completion, litigation may result. For instance, in recent years there have been a rash of lawsuits by condominium associations against engineers who certified to public authorities that the project had been completed in accordance with the plans and specifications.

There is not a great deal engineers can do to avoid this problem. Public authorities, construction lenders, and others customarily require an architect’s certificate before issuing an occupancy permit or authorizing the release of a final construction loan disbursement.

The only thing the engineer can do is to try to convince project owners to use certification language which accurately reflects the engineer’s limited role during the construction phase of the project. Rather than blankly certifying that the contractor’s work complies with all plans, specifications, and ordinances, engineers could more appropriately be asked to certify that to the best of their knowledge and belief this is the case. Engineers might also want to state that they are not and cannot be guarantors of the sufficiency of the contractor’s work.

Engineer's Role in the Claims Process

Considering the engineer's intimate involvement with a typical project from beginning to end, it is not surprising that engineers become very involved in the claims process. The claims process refers to the process whereby the construction contractor requests additional compensation or other benefits under the contract from the project owner.

The engineer's responsibilities during the construction phase make it almost inevitable that the engineer will get involved in claims situations. Many construction contracts recognize this reality and specifically delineate a certain role for the engineer.

Engineer as Agent of the Owner

If the architect is given responsibilities during the construction phase of the project, the engineer carries out those responsibilities as the agent of the owner. This is a crucial factor, as the agency relationship has a number of legal ramifications. A construction contractor has the right to rely on the words and actions of the engineer if the engineer is acting within its actual or apparent authority on the project.

An owner cannot designate an engineer as an on-site representative and then disown the remarks or directives of that representative. The law recognizes this by holding that the project owner, as "principal," will be bound by the acts of its agent, the engineer. Engineers must constantly keep this in mind during the construction phase. Every directive and every interpretation must be consistent with the terms of the contract the construction contractor agreed to. If the engineer's directives are inconsistent with the terms of the contract, the contractor may very well be entitled to additional compensation or some other remedy under the contract. The owner will pay for this remedy, as the owner is bound by its agent's actions.

Conversely, any information that comes to the attention of the engineer during the construction process will be imputed to the project owner. If a contractor points out a differing physical condition at the site to the engineer or informs the Engineer of a problem that is delaying progress, the engineer has a duty to promptly inform its principal, the owner. Even if the engineer fails to transmit this information to the owner, the knowledge will still be imputed to the owner because of the agency relationship. The contractor has the right to assume that anything said or given to the owner's designated representative will be transmitted to the owner.

The legal impact of this agency doctrine is significant. An engineer, as agent of the owner, has the ability to inadvertently waive contract rights possessed by the owner or grant certain contractual remedies to the contractor.

CASE STUDY

Owner solicited bids for construction contract. The contract drawings contained a conflict regarding responsibility for relocation of a gas line. One bidder telephoned Owner's Engineer and asked for a clarification. Engineer said the utility would take care of it.

Bidder was awarded the contract. Owner then required Contractor to relocate the gas line. Contractor sued Owner for additional compensation saying it had been entitled to rely on the pre-bid oral statement by Engineer.

*The Court of Special Appeals acknowledged that under similar circumstances, it had held project owners accountable for the pre-bid statements of engineers functioning as agents of the owners. In this case, however, the bid documents expressly stated that all clarifications must be in writing and oral explanations would not be binding. Therefore, Engineer was acting outside the scope of his agency authority in giving an oral explanation and Contractor was not entitled to rely on that explanation. **Mass Transit Administration v. Granite Construction Co., 471 A.2d 1PI (Md.App. 1994).***

It is crucial that any change in the legal relationship between owner and contractor result from a thoughtful, deliberate decision which the project owner has expressly authorized. An owner which discovers that its engineer has inadvertently waived certain contractual rights will not be pleased.

In order to protect itself and its client the owner, an engineer must be thoroughly familiar with the construction contract. This includes not only the technical aspects of the contract but the general provisions and other "legal" aspects as well. If the engineer is not familiar with the rights and responsibilities of each party, how can it appreciate the ramifications of its actions or directives'?

CASE STUDY

Construction contract specified a particular product "or equal." Contract also stated that Engineer was responsible for determining Contractor's compliance with the plans and specifications.

Contractor proposed an alternate product and Engineer approved the substitution. Owner later refused to allow Contractor to install the approved alternate product. Contractor installed the more expensive product named in the specifications and sued Owner for the increased cost.

*The Appeals Court ruled that Engineer was the authorized agent of Owner in matters of compliance with the specifications. Once Engineer had approved the product in accordance with the procedure established in the contract, Owner was bound by that determination and could not rescind the approval. **E. A. Berman Company v. City of Marlborough. 419 N.E.2d 319 (Mass.App. 1991).***

While discussing agency, it is necessary to note the importance of the scope of the engineer's authority. Frequently, the engineer is not designated as the owner's on-site representative. The engineer's construction phase responsibilities may be limited to monthly inspections and a final certificate of completion.

The engineer's agreement with the owner should make this clear. So should the construction contract. There is nothing worse for an engineer or an owner than working with a construction contract which implies the engineer has broad job site authority when in fact the owner has given the engineer very little authority. All the contract documents should accurately reflect the engineer's scope of authority. All parties will know where they stand, and there will be no problem with the contractor relying on apparent authority which the engineer actually does not possess.

Engineer as Arbitrator

It is common for construction contracts to state that any claim for a price increase or extension of time must first be presented to the engineer for a decision. When presented with such a request, the engineer is expected to make an independent judgment as a professional, not a parochial decision based on the engineer's loyalty to the project owner.

This is a difficult task, as the engineer is being asked to function simultaneously as agent of the owner and as a neutral arbitrator. Furthermore, the engineer may be faced with a direct conflict of interest if the claim relates to the sufficiency or accuracy of the engineer's work product.

For instance, a contractor may claim that the drawings inaccurately portrayed site conditions or failed to address the fit of particular components. The sufficiency of the engineer's professional work product is called into question. It is difficult for the engineer to be entirely objective, knowing that a favorable recommendation on the contractor's claim will raise questions from its client, the project owner. Nonetheless, the engineer has an obligation to make an objective determination and give the contractor that which it is entitled to under the contract.

The effects of this conflict are mitigated by the fact that when the architect functions as an arbitrator during construction, it is usually just dispensing a preliminary administrative remedy.

The contractor must, under the terms of the contract, seek the engineer's decision first, but it is not ultimately bound by that decision.

Typically, the decision can be appealed to an administrative board or a court. Frequently, an arbitration clause calls for formal, binding arbitration of the dispute. This is separate from the engineer's "arbitration" role during the construction phase, and the engineer would never serve on a panel of arbitrators if the engineer had been involved in the project.

In the past, some public contract documents purported to give the engineer final authority to resolve all claims. These so-called engineer decision clauses stated that there could be no appeal from the engineer's decision on a claim.

Courts were hostile toward these clauses, recognizing the inequity of allowing the owner's agent or employee to make decisions without appeal. Although the clauses were considered enforceable, courts were resourceful at finding ways to limit their effect. Today, engineer decision clauses are rare in public construction contracts. Most jurisdictions have established administrative boards to decide contractor's claims.

While the engineer's opinions and the engineer's initial response to the claim will certainly be considered, the board will have authority to make independent findings of fact, rulings of Law, and a decision on the claim.

CASE STUDY

Construction contract stated that Engineer "will decide all questions which may arise as to the acceptable fulfillment of the contract on the part of the contractor."

Owner and Contractor got into a dispute over late completion of the project. Engineer made a determination regarding the amount of liquidated damages that Owner could withhold from Contractor's final payment. Contractor sued to recover the money withheld. Owner argued that the terms of the contract made Engineer's decision final and binding on all the parties.

*The Court of Appeals ruled that an engineer's resolution of a dispute will be final and without appeal only if the construction contract expressly states that the engineer will be the final arbitrator. In this case, the contract contained no such statement. Engineer's authority was limited to interpreting the contract documents and making decisions during the performance of the work. Engineer was not the final arbitrator of disputes. **New Pueblo Constructors, Inc. v. State of Arizona, 696 P.2d 203 (Ariz.App. 1985).***

Contracting Terms

Standard of care

In carrying out its responsibilities, the engineer is required to possess and exercise the level of skill and judgment that is accepted among similarly situated design professionals.

Warranty of plans and specifications

The owner extends an implied warranty to the contractor that the plans and specifications are accurate, complete, and suitable for the successful construction of the project. The engineer therefore has an obligation to furnish the owner with design documents that meet this standard.

Privity of contract

Privity is a direct contractual relationship. There used to be a legal requirement, now virtually obsolete, that a party be in privity of contract with another party before the party could be held liable to that other party.

Foreseeable harm

If a party is negligent in the performance of its duties, it may be held liable to any party who suffered harm that was foreseeable at the time the duties were undertaken. Therefore, an engineer may be held liable to contractors or subcontractors despite the lack of privity of contract.

Limitation of liability

A contractual provision whereby the two parties to a contract agree to establish an upper limit of liability for certain specified shortcomings or breaches of contract. The clause cannot limit liability toward parties who did not sign the contract.

Construction monitoring

It is a general term referring to the services provided by the engineer to the project owner during the construction phase of the project. The specific scope of the engineer's responsibilities must be established in the owner-engineer agreement. The scope of responsibilities will determine the degree of liability exposure.

Agency

Agency is a legal relationship whereby one party gives another party authority to represent and act on behalf of the former party. An engineer is frequently the agent of the owner on a construction project. The owner is therefore bound by the actions of the engineer and the knowledge of the engineer is imputed to the owner.

Certification

It is a written statement that something has occurred. engineers are frequently called upon to certify to the owner (and any other party that may foreseeably rely on the certification) that the contractor has achieved certain milestones in its performance of the construction work.



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THE CONTRACT DOCUMENTS

The document agreement

There is no particular mandatory form of document agreement required to create a construction contract. Despite of this, the construction industry has developed to the point where most contracts follow a fairly predictable format and consist of certain standard parts.

An “agreement” itself is usually the shortest document of all the contract documents. It establishes the essential elements of the contract varying from project to project. These essential elements are price, payment, quality, risk, and schedule.

To agree on a fixed price for a construction contract, it is necessary to have a well-defined scope of work. Any contractor will be unable to estimate its costs if the owner has failed to depict the work in detail and specify the materials and equipment that will be required. A poorly defined scope of work on a fixed-price contract will almost certainly result in disputes and claims.

If bid contracts are required by policy to be fixed-price, both a detailed scope of work and a reasonable change order process for these contracts should be expected.

Cost plus contracts are priced on the basis of the contractor’s cost of the work plus a fixed fee. These contracts call for the contractor to be paid its direct and indirect costs of performing the work, plus a fixed fee serving as the contractor’s profit. While the total cost of the project may be more or less than the original estimate, the owner will bear this cost and the contractor will receive the same fee originally negotiated.

One of the real difficulties while drafting a cost-plus contract is to come up with a good definition of the contractor’s performance cost. Direct costs, such as labor and materials, are usually not much of a problem. Indirect costs, such as insurance and office overhead, are a problem, as these costs must be allocated among all the projects being performed by the contractor. On cost-plus, it is not unusual for the definition of “cost” to cover several pages. This is necessary to avoid misunderstandings and disputes.

A cost-plus contract enables the contracting parties to work with less precise scope definition. This is true only to some extent and it should be carefully controlled to avoid the contractor thinking he has a blank check to incur all the costs it wants.

Cost-plus contracts usually include a guaranteed maximum price cost plus fee, which is not to be exceeded without owner’s consent. On the other hand, a contractor cannot commit itself to a guaranteed maximum price unless it has an accurate idea of what it will be required to construct.

Cost-plus contracts may also include a “shared savings” provision. In addition to establishing a guaranteed maximum price, the contract states a target amount of costs to be incurred in constructing the project and if the contractor is able to complete the work for less than the target cost, the contractor and the owner share the savings according to a previously established formula.

The purpose of the shared savings provision is to give the contractor an incentive to minimize costs, because in the absence of such a clause, the contractor has no incentive to optimize operations as long as the total cost plus fixed fee stays within the guaranteed maximum price.

Another method of pricing construction work is the “unit-price” method. The project is divided into certain elements which can be quantified, such as linear meters of conduit or cubic meters of concrete. The contracting parties agree on a price per unit of each element of the work and payment is made on the basis of the actual quantities of work executed.

Typically, the contract documents for a unit-price contract will state estimated quantities for the various elements of the work. These quantities are not binding on the owner and are used primarily for purposes of bid comparison. Total bid amounts are computed by applying the bid unit prices to the estimated quantities of work.

Unit-price contracts are widely used on projects such as excavation, highways, sewer lines, and water pipe networks. The routine nature of this work lends itself to unit-price measurement. The contractor knows it will be paid for all work performed and the owner knows that it will pay for no more than the actual volume of work performed. This kind of contract is also called re-measured.

Yet another method of pricing construction work is “time and materials.” A fixed price is placed on each hour of labor the contractor furnishes. The owner also agrees to pay the direct costs of the material and equipment used on the project. Typically, no payment is made for any indirect costs. The parties should agree in anticipation as to who will receive the benefit of any trade discounts on materials that the contractor receives from its suppliers.

The time and materials method provides very little certainty for project owners and is not typically used on large projects. It is a useful method for small projects where the parties want to avoid the time and expense of a detailed scope of work and detailed cost estimates. It is also widely used as a method of pricing extra work on change orders.

Method of Payment

A construction agreement should also establish the method of payment to be used by the owner. Most construction projects are performed over a period of months or even years. It would be not only inequitable but probably not feasible to ask the contractor to wait until completion to receive payment because contractors will add the financing costs to the bid price thereby further complicating the awarding issues.

Construction contracts commonly call for progress payments, usually monthly ones based on the value of the work performed during the preceding payment period.

On a unit-price contract, the value is easy to measure, as the unit prices are simply applied to the actual quantities of work performed. On a fixed-price contract, it is necessary to measure the value of the work in place by determining percentage of completion. Usually, a weighting value for various phases or portions of work is established under the contract and payment is then calculated according to routine workouts.

A contract agreement usually calls for an amount of the corresponding payment to be withheld as retainage to protect the owner against construction defects. The amount retained is usually 5 to 10 percent of the progress payment. The retained funds have already been earned by the contractor, but they will not be released until completion of the project. Payment of the retainage will be subject to final acceptance of the project.

Contract agreements usually call for a reduction of retainage as the contractor makes progress toward completion. For instance, once the contractor completes 50 percent of the project, retainage may be reduced from 10 percent of each progress payment to 5 percent of each payment. The rationale for this decision is that after 50 percent completion of the project, the owner already has a large pool of retained funds and as the contractor gets closer to completion, there is somewhat less risk to the owner.

The construction agreements usually establish the timing of final payment to the contractor. Final payment must consist of the last monthly progress payment plus the accumulated retainage. It should be noticed that there are a number of important legal consequences attached to release of final payment which an agreement itself does not address.

Usually, the agreement will state that once the contractor finishes all but the “punch list,” or touch-up items, the contractor will be entitled to the contract balance less 1.5 or 2 times the estimated cost of completing the punch list items. In other words, the retainage will be reduced to leave only enough to assure the owner of proper completion of those items.

Once the punch list has been completed, the work will be inspected again and if everything is in order, the owner will release final payment. The contract agreement should establish whether final payment is due immediately upon final acceptance, 30 days after final acceptance, or some longer period of time after final acceptance.

Schedule

One of the essential ingredients of the construction documents which should be thoroughly addressed in the contract agreement itself is the project schedule. A contract agreement should establish the period within which the contractor must complete its work. This may be expressed as a specific calendar date. More frequently, it is expressed as a stated number of calendar days.

When the performance period is expressed in calendar days, the period starts to run upon the owner's issuance of a formal, written notice to proceed. A formal notice is desirable because it avoids any confusion as to when the performance period started to run.

A contract agreement not establishing the specific interim schedules, which the contractor must meet while performing the work along with specific updates and status reporting will disable any opportunity of control the job properly, avoid claims, and settle construction issues.

Documents Incorporated by Reference

Incorporation of a number of separate documents into a contract agreement by reference is usually done. A construction agreement is frequently quite succinct, simply naming the parties, stating the name and location of the project, and establishing the terms of price, payment, and schedule. The actual terms and conditions of the contract, as well as the definition of the work, are contained in separate documents listed in the agreement and physically attached to the agreement.

Incorporated documents, discussed in greater detail below, commonly consist of:

- (1) "general conditions," which are usually pre-printed, so-called boilerplate provisions under which the work must be performed;
- (2) "supplementary general conditions, " which are usually customized provisions developed by the parties to address particular concerns which have arisen with regard to the project;
- (3) Plans, or drawings, depicting the work, usually listed in the agreement by number;
- (4) Specifications which define the standards which the work, material, and equipment must meet;
- (5) Additional schedule requirements; and
- (6) Various government regulations which the contractor will be required to conform to during performance of the work.

Quality of work

A contract agreement should include the project quality plan as designed by the project's owner and including all the activities related to quality assurance and quality control.

Distribution of risk

A contract agreement is by definition a distribution of risk while executing the projected works. Special care should be given to ascertain these risks are equally distributed since legal courts will immediately dismiss any intent of unbalanced allocation. A risk plan as design by the project's owner should be part of the approved contract document.

Execution of the Contract

Last but certainly not least, the agreement provides for the signing, or “execution,” of the contract documents. Usually, it is the only document which is actually signed by the parties. As all the other documents are incorporated by reference into the agreement, it is not necessary that they be signed in order to become binding on the parties.

It is important that the agreement be signed by an individual who is authorized by its organization to bind that organization to the agreement. For instance, an agreement should be signed by a duly authorized officer of a corporation or the general partner of a limited partnership. Below the signature line, it should indicate the name and title of the signing individual and recite the fact that the individual is duly authorized to do so by its organization.

Ideally, each signing individual should produce documentation of their authority, i.e., a corporate resolution or a copy of partnership agreement. This should be attached to and incorporated into the agreement. Unfortunately, this procedure is seldom followed.

It is common for the parties to make last-minute changes to the contract documents, frequently just prior to execution. Changes should be handwritten and in ink. Every change should then be initialed in the adjacent margin by the parties executing the agreement. This way, there will be no confusion regarding the parties' intent to include these changes in the agreement.

THE GENERAL CONDITIONS

Function

As described above, the construction agreement itself usually covers only the basic business terms of the transaction. The function of the general conditions is to establish the legal terms and conditions that will govern the construction of the project. They include a number of provisions that are crucial in determining the respective rights and responsibilities of the owner and contractor.

With most preprinted contract forms, the general conditions comprise a separate document which is attached to the agreement. Sometimes, however, the general conditions are simply a section of a single integrated document. It makes no difference from a legal standpoint, of course.

From a practical standpoint, it is advantageous to keep the two documents separate. The agreement necessarily requires extensive customization and may be altered right up to the time of execution. The bulky general conditions tend to be less extensively modified. By keeping the documents separate, the parties can make last-minute changes with greater ease and clarity.

Contents of the General Conditions

General conditions should address everything from the mundane such as site cleanup or maintaining order among the crew to the crucial such as change order procedures or compensation for unanticipated subsurface conditions.

A list of the important issues addressed in the general conditions basically describes: insurance requirements, change order procedures, time extensions for excusable delay, compensation for differing site conditions, the resolution of disputes, etc. This is the document where the respective rights and responsibilities are established, and all kind of risks are shared.

Supplementary General Conditions

Considering the legal significance of the general conditions, it is not surprising that one or both of the parties may want changes made in the preprinted terms.

These changes are usually contained in a document labeled “Supplementary General Conditions.”

The supplementary general conditions are really a “catch-all” document covering any aspect of the arrangement which is peculiar to that project and therefore not addressed in standard. Certain limitations on site access may be established, local ordinances affecting the work may be referred to, and as mentioned above, if the parties have rewritten the indemnification clause contained in the preprinted general conditions, this is the place for the new clause.

The supplementary general conditions take precedence over the general conditions. It is a good practice to include a written statement to that effect in the supplementary general conditions in order to avoid any ambiguity.

DEFINING THE SCOPE OF WORK

Drawings

Drawings are the documents most commonly associated with construction design. One or more drawings will depict the elevations of the structure. This indicates the height above sea level of the footings, foundation, etc. Additionally, a number of sectional drawings will depict the various sections of the building in detail.

The drawings described above are typically prepared by an architect who is serving as the prime design contractor. On an “engineered” project such as a bridge or highway, an engineer usually serves as the prime design contractor and prepares the plans, elevations, and sectional drawings.

Regardless of who serves as the prime design contractor, it is customary to retain the services of design consultants from various specialized disciplines. The drawings prepared by these consultants also become part of the contract drawings. It is common to find structural drawings depicting the conformation and connection of structural members of the structure. Another set of commonly found trade drawings depicts the building’s mechanical and electrical systems. Foundation drawings prepared by a soils and foundation engineer are also common.

Many drawings, regardless of their nature, contain “details.” As the name implies, these drawings depict a certain small portion of the structure in greater detail and smaller scale than that shown on the drawing itself. This is usually done because of the complexity or sensitivity of that particular portion of the work. The details are set off to the side of a larger drawing. They are seldom found on separate sheets.

Another traditional aspect of drawings is schedules of materials to be used. Generally, the selection of materials is mandated in the specifications. It is customary, however, to list the selection of certain items such as wall and floor finishes and hardware in schedules written on the side of a drawing. This practice probably stems from the fact that the drawings sometimes take precedence over the specifications and cautious designers have wanted to make sure that their selection of materials was followed.

Specifications

Specifications are a volume of written material which defines the equipment and materials to be used on the project and, to a lesser extent, the method of applying, installing, or assembling this equipment and material. The importance of the specifications has grown through the years due to the complexity of construction and the larger number of options available with regard to equipment and material.

The growing importance of specifications also reflects the reluctance of project owners and engineers to rely simply on “trade practice” to define the method of application or installation. The specifications give the owner and designer greater control over these methods.

With regard to the selection of equipment or materials, there are two basic types of specifications:

- Proprietary: and
- Performance.

Proprietary specifications call for a particular brand and model to be used. On private construction contracts, the contractor is required to use that specific product.

On public contracts, a proprietary specification is usually stated as “brand name or equal.” In order to foster competition, public laws and regulations prohibit specifying a single product. If the contractor can convince the engineer that a different product is “equal,” it must be allowed to use that product.

If a proposed alternate product possesses all the “outstanding characteristics” of the specified brand, it is considered equal. The outstanding characteristics are the physical properties and performance capabilities that reasonably meet the public project owner’s minimum needs for the project.

Performance specifications do not refer to any particular brand or product. Instead, the specification states certain performance capabilities which the equipment or material must meet. For instance, a pump might be required to be capable of moving a specified number of gallons per minute, or roofing material might be required to be guaranteed for a certain number of years. The selection of a particular product is left up to the contractor.

Performance specifications are not as widely used as proprietary specifications because the project owner and engineer do not have the same degree of control over the contractor’s work. However, some of the emerging forms of construction contracting make it necessary to use performance rather than proprietary specifications.

Specifications are usually organized according to the 16 standard section of the Uniform Construction Index, originally developed by the *Construction Specifications Institute*. The sections generally reflect the customary building trades and are listed below.

1. General requirements
2. Site work
3. Concrete
4. Masonry
5. Metals
6. Carpentry
7. Moisture protection
8. Doors, windows, and glass
9. Finishes
10. Specialties
11. Equipment
12. Furnishings
13. Special construction
14. Conveying systems
15. Mechanical
16. Electrical



In recent years, standard, computerized master specifications have been developed to assist the designer in defining the work. The most widely used is a system called ‘**Masterspec**’. While these standard specifications can be a useful tool in getting started in defining the work, they are not a substitute for the careful individual attention of an experienced specification writer.

Owner’s Implied Warranty

When discussing plans and specifications, there is one legal principle which is of crucial importance to the engineer.

Courts have long held that when a project owner provides a set of plans and specifications to a construction contractor, the owner extends an implied warranty that the documents are accurate, complete, and suitable for their intended purpose. If they are not, the contractor will be entitled to recover its increased cost of performance caused by the defective design documents.

This warranty is implied; so it need not be stated in the contract documents themselves. It applies regardless of whether the project is public or private and regardless of whether the contract is competitively bid or negotiated.

This doctrine is of great significance to the engineer because the project owner relies on the professional expertise of the engineer in developing a set of complete, accurate plans and specifications. If the plans and specifications are defective and the owner pays the contractor additional sums as a result, the owner will probably seek reimbursement from the engineer. Given the scope of the engineer’s professional responsibilities, the owner will in all likelihood succeed in this quest.

CASE STUDY

Owner awarded a contract for construction of a water pumping station. The drawings indicated the presence of an electrical pole 50 feet from the structure, but failed to indicate that a telephone service could be made available from that pole. In order to bring in a telephone cable, contractor was forced to dig an 11,000-foot trench. Contractor claimed additional compensation. Owner relied on contract language stating that utility locations were only approximate.

*The Appeals Court ruled that Owner extended an implied warranty that the plans and specifications were accurate and complete. The failure to indicate that no telephone service was available from the pole rendered the contract documents incomplete. Therefore, Owner breached the implied warranty. **Richardson Electrical Co., Inc. v. Peter Franchese & Son, Inc.. 484 N.E.2d 108 (Mass.App. 1995)***

INTERPRETING THE CONTRACT

Considering the complexity of the contract documents described above, it is not surprising that the various parties on the project sometimes have differing interpretations of what is required. Over the years, courts have developed certain basic rules of interpretation which should be kept in mind when dealing with these disagreements. The most significant rules of interpretation are described below.

CASE STUDY

Owner awarded a contract for highway construction. Elevations indicated in the drawings were higher than the actual elevations in the field. This forced Contractor to bring in additional fill. Contractor brought a claim for additional compensation. Owner argued that elevations indicated in the drawings were for informational purposes only and could not be relied on without independent verification.

*The Appellate Division of the Superior Court held that notwithstanding the contractual disclaimer, Owner extended an implied warranty of the accuracy of all affirmative representations in the contract documents. The elevations were inaccurate, and this was a breach of the implied warranty. **Golomore Associates v. New Jersey State Highway Authority. 413 A.2d 361 (N.J.App. 1980).***

Construed against the Drafter

If any provision of a contract is ambiguous, that provision will be construed, or interpreted, against the party who prepared the agreement. This rule of law is sometimes referred to by the Latin phrase *contra proferentem*.

A contract provision is considered ambiguous if it is subject to two different interpretations and each interpretation is reasonable. In that event, the reasonable interpretation of the party that did not draft the agreement will prevail.

As agreements are usually prepared by project owners, this rule of interpretation is more frequently applied against owners to the benefit of contractors. This is particularly true on publicly bid projects where the complete set of contract documents is presented to prospective bidders on a “take it or leave it” basis. If a bidder’s interpretation of the contract requirements was reasonable and the bidder relied on that interpretation when pricing its bid, then that interpretation will prevail.

On private projects, there tends to be more negotiation, more give and take, in arriving at the terms of the contract. The more negotiation there is, the less likely that a court will characterize the owner as the drafter of the agreement.

Even on private projects, however, it is common for the owner to present the contractor with a complete set of contract documents. Negotiation is usually limited to matters such as price or schedule. In this situation, courts will not hesitate to apply the rule of *contra proferentem* against the project owner when interpreting an ambiguous provision in the specifications or general conditions.

CASE STUDY

Contractor did award a subcontract using Contractor's preprinted subcontract form. Subcontract stated that payment to Subcontractor would be due 10 days after Contractor received payment from Owner.

Owner did not pay contractor, so contractor refused to pay subcontractor. Subcontractor argued that clause in subcontract was intended only to give Contractor a reasonable time to make payment, not to excuse payment altogether if contractor did not get paid by Owner.

The Court of Appeals ruled that the intended meaning of the payment clause was ambiguous. The preprinted subcontract form had obviously been drafted by contractor. Therefore, the clause was construed against contractor and subcontractor's interpretation prevailed. Cahn Electric Co., Inc. v. Robert E. McKee, Inc., 490 So.2d 647 (La.App. 1996).

Trade Usage

In any industry, and certainly in the construction industry, a number of terms take on a specialized meaning among those in the industry. Courts consider these terms to be “trade terms.” If a contract uses trade terms (and of course any set of specifications is laden with them), courts will interpret the terms according to their commonly accepted meaning within the industry.

It matters not that the judge, the jury, and members of the general public don’t understand the term. If the term has a widely accepted meaning in the industry, it will be interpreted accordingly. Individuals and organizations who engage in commerce will be presumed to understand the meaning of trade terms used within their particular industry. Neither a contractor nor a project owner would benefit from arguing that it did not understand “**rebar**” to mean steel reinforcing bars.

Internal Contradictions

One of the primary concerns of a party putting together a set of contract documents is to avoid conflicting provisions within the documents themselves. Internal contradictions are a common source of claims and disputes. At best, they appear sloppy and unprofessional.

Internal contradictions result primarily from the widespread use of standard forms of agreement and standard sets of specifications within the construction industry although the use of standard forms is generally beneficial and it is by no means a bad practice to be avoided.

The danger in using standard forms, however, is that they are frequently pulled off the shelf and thrown together with little forethought. They are not tailored to fit the particular project. Worse yet, they are not even carefully read in their entirety in order to flush out ambiguities and contradictions.

For instance, an engineer working on behalf of a public owner may use the same standard form of agreement he has used successfully in the past. The engineer then learns that certain public regulations or mandatory contract provisions must be incorporated into the contract documents. If a careful effort is not made to reconcile all the documents, the engineer may end up in the embarrassing position of having prepared a contract with a number of conflicting requirements.

CASE STUDY

Owner awarded a contract for construction of a medical clinic. The contract included two “typical wall details” which were conflicting with each other regarding the installation of rebar.

Contractor chose to follow one drawing. Owner ordered Contractor to rip out the work and follow the other drawing which, said Owner, was consistent with local trade practice. Contractor appealed.

*The Court of Appeals ruled that the drawing details were patently ambiguous. When interpreting ambiguous contract documents, it is appropriate to rely on local trade custom to determine intended meaning. Contractor’s appeal was denied. **Fortec Constructors v. United States**, 760 F.2d 1288 (Fed.Cir. 1985).*

Similarly, the use of standardized or computerized specifications such as Masterspec can produce troublesome results if care is not taken to customize the specifications for each individual project and reconcile the specifications with the other contract documents.

The blind use of “canned” specifications will frequently result in provisions which conflict with drawing notes or other documents.

The duty to avoid internal contradictions falls largely on the engineer, as the project owner typically relies on the engineer to prepare so many of the contract documents, technical and otherwise. Constant vigilance is required to avoid embarrassing or troublesome situations.

Given the length and complexity of a typical set of contract documents, however, it is inevitable that contradictions will occasionally occur. As a result, courts have developed certain rules of interpretation to be applied when one provision of the contract documents says something that contradicts a statement found elsewhere in the documents.

When a direct contradiction exists, the terms of the agreement take precedence over the terms of the general conditions. If supplementary general conditions have been incorporated into the contract documents, these supplementary conditions will prevail over the general conditions. They will not take precedence over the terms of the agreement itself, however.

When contradictions exist between the drawings and the specifications, the more specific item governs the more general item. **It is frequently stated that the specifications prevail over the drawings.** This is true, however, only to the extent the specifications are more detailed and specific than the information in the drawings. This is usually the case, but not always. For instance, **drawing notes take precedence over the provisions in the specifications.**

CASE STUDY

Owner awarded a contract for BOT-financed project. The contract was a standard BOT document, but it incorporated an American Institute of Architects (AIA) document as the general conditions of the agreement.

The BOT document and the AIA document contained conflicting definitions of when substantial completion of the work was achieved. It later became important to determine the date of substantial completion in order to compute the early completion bonus to which Contractor was entitled.

*A. District Court noted that the BOT document contained an ‘order of precedence’ clause stating that the BOT document took precedence over any conflicting provisions in any other document. Therefore, the BOT definition of substantial completion was determinative. **McCarthy Brothers Construction Co. v. Pierce, 626 F.Supp. 981 (E.D.Mo. 1993)***



CASE STUDY

Owner issued a written change order for Contractor to furnish and apply 130 tons of asphalt at a unit price of \$180 per ton.

Owner later orally requested another 381 tons of asphalt with no discussion of price. In the subsequent dispute, Owner contended it should only have to pay the reasonable value of the additional asphalt and that value should reflect certain economies of scale.

*A District Court of Appeal ruled that the oral change order was ambiguous because of the failure to establish a price. When interpreting an ambiguous provision of a contract, the past actions of the parties are the best indication of intent. Therefore, Owner must pay at the \$180 per ton rate established in the original written change order. **Forest Construction, Inc. v. Farrell-Cheek Steel Co., 484 So.2d 40 (Fla.App. 1994).***

The general principle which is at work here is that the specific takes precedence over the general. Terms that were customized by the parties will prevail over “boilerplate” provisions of the contract documents.

As described before, a written contract is nothing more than a memorialization or documentation of the mutual understanding of the parties. In trying to determine what that understanding was, a court will be more persuaded by something the parties developed for this specific project as opposed to a standard document which was pulled off the shelf and incorporated into the documents with no modification whatsoever.

For instance, specifications are frequently standardized. Drawings, by definition, must be customized for each individual project. In the event of a direct contradiction between the two, it is logical to assume that the drawing more accurately reflects the intent and the understanding of the parties. It is for this reason that the old adage of specifications governing drawings is misleading.

Contract Must Be Read as a Whole

The final rule of interpretation is simply common sense. When interpreting a set of contract documents, all provisions must be considered and they all must be presumed to be complementary. No provision may be considered in isolation and no provision may be presumed to be useless.

Again, the logic behind this rule is that the written contract documents are simply a reflection of the parties' mutual understanding. If the parties did not intend for a provision to have meaning, why would they include it in the contract documents?

While a provision standing alone may indicate a certain understanding, this must be modified by any other contract provisions that relate to the same matter. All provisions are presumed to reflect intent and each is considered to complement the others. This assumes, of course, that there is not a direct contradiction between two provisions, in which case the rules of interpretation described above will be applied.

This rule of interpretation is probably the one which is most frequently applied to contract documents. When a dispute arises, it is common for one of the parties to latch onto a particular aspect of the contract documents to support its argument as to what was or was not required by the contract. In interpreting the intended meaning of the contract, it is important to consider all provisions and avoid focusing solely on one isolated clause.

CONTRACTOR'S PERFORMANCE OBLIGATIONS

When discussing the interpretation of the contract documents, it is important to mention the standard of performance to which the contractor will be held. This standard is interesting because it appears to be contradictory.

On the one hand, the project owner is entitled to insist on absolute compliance with the plans and specifications. Close is not good enough. The contractor must fully perform the work in strict compliance with every specific requirement in the contract. This is what the owner bargained for and this is what the owner is entitled to get for its money.

On the other hand, courts recognize that it is unrealistic to expect a contractor to conform exactly to every single requirement on a project which may be large and complex. It would be unfair to allow a project owner to hold a contractor in breach of contract, and refuse to make payment, simply because minor aspects of the work have not been completed in strict conformance with the plans and specifications. Consequently, courts have developed the doctrine of "**substantial completion.**" It is a legal doctrine peculiar to construction contracts.

Under this doctrine, a Contractor is deemed to have fulfilled its contractual obligation once the project is "substantially complete." Substantial completion is achieved once the project is fit to be used for its intended purpose.

For instance, an office building is substantially complete once the project owner can take beneficial occupancy of the building. The fact that some decorative woodwork is missing or some sinks are scratched would not prevent the owner from using the building.

What, one might ask, became of the requirement that the contractor fully perform the work in strict compliance with the plans and specifications? Courts accommodate this requirement by allowing the owner to set off sums from the final payment sufficient to cover the cost of repairing or completing any minor items. This process will be described in greater detail.

In considering the contractor's performance obligations under the contract documents, then, it is important to remember that the owner can insist on strict compliance. Once the project is substantially complete, however, the Owner cannot rely on lack of compliance as an excuse for failing to pay the Contractor or terminating the contract.' Once substantial completion is achieved, the owner's only remedy is to withhold, or set off, sufficient funds to cover the cost of repair or completion of any outstanding items.

Finally, it should be noted that determining when substantial completion is achieved is usually a judgment call. The owner and contractor may have different interpretations of when the project is fit for its intended purpose. Common sense must prevail. While lack of decorative woodwork does not prevent the beneficial use of an office building, the lack of a functioning elevator or air-conditioning system certainly does.

STANDARD AGREEMENTS

Importance of Standard Agreements

It should now be quite apparent that a typical set of contract documents for even a modest-sized construction project is a rather thick volume. If the parties to the project had to draft each contract from scratch, it would be a monumental undertaking. If the parties hired attorneys to do the drafting, it would be a very expensive undertaking.

In response to this problem, certain standardized form contracts have been developed. The use of standard form agreements is probably more widespread in the construction industry than in any other industry.

It should be noted that when one refers to “standard agreements” in the construction industry, the reference is not to the standardized specifications that were mentioned earlier in this chapter. Standard agreements spell out the legal and financial terms and conditions of the construction project. They typically consist of an agreement and a set of general conditions.

The widespread use of standardized forms in the construction industry is attributable to two compelling advantages they offer. As mentioned above, they save time. It is far more efficient to make additions, deletions, and other changes to a preprinted form than it is to draft a 20-page contract on blank paper.

In addition to saving time, standard contracts offer more certainty than individually drafted agreements. Many of the standard forms have been in use for years. Their terms and conditions have been repeatedly interpreted by the courts. When areas of ambiguity or misunderstanding have come to light, changes have been made in the forms. Considering the fact that most construction contracts are not assembled by attorneys, the predictability that results from using standardized, widely accepted terminology is very desirable. For these reasons, standard forms have become prevalent on both private and public construction projects. Many public project owners such as state agencies or municipalities have developed their own standard contract documents. Regardless of the particular form that is used, the use of a standardized form offers the advantages of greater predictability and less time.

Having glorified the virtues of standard agreements, it is time to again stress the dangers. As described earlier in this chapter, the careless, unthinking use of standardized contract forms can produce a disaster. At best, there will be many contract provisions which are simply irrelevant to the project at hand. At worst, there will be internal contradictions in the contract documents. Provisions in the standard form may conflict with other supplementary provisions required by law or with statements made in the specifications.

There is no substitute for a careful, thoughtful review of all the contract documents as a whole. Irrelevant provisions should be eliminated. Any particular items peculiar to the individual project must be addressed, and the documents should be consistent and clear.

The proper role of legal counsel in assembling the contract documents should also be considered. It is customary in the industry for the engineer to assemble the documents on

behalf of the project owner. This is an acceptable practice. It is only prudent, however, for the engineer to ask the project owner to have its legal counsel review the completed package. This should not require a great deal of time, as the attorney is not being asked to draft the documents.

The attorney's review can be very useful, as it brings a different perspective and different professional skills to the contract documents. From a practical standpoint, the attorney's review will protect the engineer from a great deal of embarrassment and possibly even liability if contradictions or other problems are later discovered in the contract documents.

Development of Standard Agreements

With the exception of contract documents developed by government entities, the standardized forms of agreement have been developed by professional and trade associations. These documents were developed as a service for members in order to offer the advantages described above.

Since the agreements were developed as a service for a particular trade or professional group, one might wonder how fair and balanced they would be. Initially, one of the primary purposes of these agreements was to protect the interests of the group's members. The forms were full of provisions designed to limit liability, maximize authority, assure payment, etc.

To the extent these forms were skewed in favor of a particular group, they met resistance from other members of the construction community. It was in the best interest of each trade or professional association to see that its forms became as widely used and accepted as possible. Consequently, compromises were made and the standardized forms became more balanced as they evolved.

In recent years, this process has been formalized. In order to foster the widespread use of its forms, an association will solicit the opinions of other industry groups and even seek the formal endorsement of the form by the other groups. For instance, standard forms published by both the National Society of Professional Engineers and the American Institute of Architects have been approved and endorsed by the Associated General Contractors of America

It can be stated that today the commonly used standard forms are fair, balanced agreements. They are generally free of the one-sided provisions that private project owners sometimes try to impose on contractors. As a general rule, they can be considered far more balanced than a customized contract prepared by an attorney who is representing the interests of only one party to the agreement. After all, the standard forms already reflect a certain amount of compromise that was necessary to gain the acceptance of diverse industry groups.

The Widely Used Standard Agreements

There are four sets of standard contract documents that are widely used in the construction industry today. These standardized documents are briefly summarized below.

The American Institute of Architects (AIA) contract documents are the oldest and most widely used standard forms. Some of the documents were in use as early as 1915. AIA has developed forms governing the relationships between not only owner and contractor, but owner and architect, architect and engineer, contractor and subcontractor, and bonding company and owner.

The various documents are coordinated to avoid conflicting provisions. They may be purchased from AIA's Washington office.

The Associated General Contractors of America (AGC), also publishes a set of contract documents. These documents are limited to relationships between owner and contractor and contractor and subcontractor. AGC has many different forms of owner-contractor agreements reflecting different business arrangements that may be made on particular projects. The AGC forms are probably the second most widely used standardized contract documents.

The Engineer's Joint Contract Documents Committee is a consortium of the National Society of Professional Engineers, the Consulting Engineering Council, the American Society of Civil Engineers, and the Construction Specifications Institute, Inc. The engineer's contract documents were published largely in response to the growing influence of the AIA documents. As yet, these documents have not become as widely used as either the AIA or AGC documents.

Trade Terms

Incorporation by reference

It is a reference in an agreement to other documents which are not physically part of that agreement stating that the other documents are hereby incorporated into and made a part of the agreement. Documents that are incorporated by reference into an agreement become binding terms of that agreement.

Order of precedence

It is a statement in an agreement that in the event of internal contradictions in the agreement, certain documents or certain portions of the agreement shall take precedence over other portions of the agreement.

Contra proferentem

A latin phrase meaning “against the party who proffers a thing.” Any ambiguities in an agreement will be construed or interpreted against the party who drafted the agreement.

Implied warranty of the plans and specifications

The project owner impliedly warrants to the contractor that the plans and specifications are complete, accurate, and suitable for the intended purpose of the project.

Substantial completion

It is the point at which the project is sufficiently complete to be occupied by the owner and used for its intended purpose. Once a project is substantially complete, the contractor cannot be defaulted or held in breach of contract.

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Forensic scheduling analysis basics

Forensic scheduling analysis, like many other technical fields, is both science and art. As such, it relies on professional judgment and expert opinion and usually requires many subjective decisions.

The most important of these decisions is what technical approach should be used to measure or quantify delay and to identify affected activities to focus on causation, and how the analyst should apply the chosen method.

The desired objective of this Recommended Practice is to reduce the degree of subjectivity involved in the current state of the art. This is with the full awareness that there are certain types of subjectivity that cannot be minimized let alone be eliminated.

Professional judgment and expert opinion ultimately rests on subjectivity. But that subjectivity must be based on diligent factual research and analyses whose procedures can be objectified.

By describing uniform procedures that increase transparency of the analysis method and the analyst's thought process, the guidelines established herein will increase accountability and testability of an opinion and minimize the need to contend with "black-box" or "voodoo" analyses.

Basic Premises and Assumptions

- Forensic scheduling is a technical field that is associated with, but distinct from, project planning and scheduling. It is not just a subset of planning and scheduling;
- Protocols that may be sufficient for the purpose of project planning, scheduling and controls may not necessarily be adequate for forensic schedule analysis;
- It is assumed that this document will be used by practitioners to foster consistency of practice and in the spirit of logical and intellectual honesty;
- All methods are subject to manipulation. They all involve judgment calls by the analyst whether in preparation or in interpretation;
- No forensic schedule analysis method is exact. The level of accuracy of the answers produced by each method is a function of the quality of the data used by the method and the accuracy of the assumptions and the subjective judgments made by the forensic schedule analyst; and
- Schedules are project management tools that alone do not demonstrate root causation or responsibility for delays. Legal entitlement to delay damages should be distinct and apart from the forensic schedule analysis methodologies.

Scope and Focus

This practice covers the technical aspects of forensic schedule analysis methods. It will identify, define and describe the usage of various forensic schedule analysis methods in current use. It is not the intent of the practice to exclude or to endorse any method over others. However, it will offer caveats for usage and cite the best current practices and implementation for each method.

The focus of the document will be on the technical aspects of forensic scheduling as opposed to the legal aspects. This practice is not intended to be a primary resource for legal theories governing claims related to scheduling, delays and disruption. However, relevant legal principles will be discussed to the extent that they would affect the choice of techniques and their relative advantages and disadvantages.

Accordingly, the practice will primarily focus on the use of forensic scheduling techniques and methods for factual analysis and quantification as opposed to assignment of delay responsibility. This, however, does not preclude the practitioner from performing the analysis based on certain assumptions regarding liability.

This practice is not intended to be a primer on forensic schedule analysis. The reader is assumed to have advanced, hands-on knowledge of all components of CPM analysis and a working experience in a contract claims environment involving delay issues.

Nor is this practice intended to be an exhaustive treatment of CPM scheduling techniques. While it explains how schedules generated by the planning and scheduling process become the source data for forensic schedule analysis, it is not intended to be a manual for basic scheduling.

This practice is not intended to override contract provisions regarding schedule analysis methods or other mutual agreement by the parties to a contract regarding same. However this is not an automatic, blanket endorsement of all methods of delay analysis by the mere virtue of their specification in a contract document. It is noted that contractually specified methods often are appropriate for use during the project in a prospective mode but may be inappropriate for retrospective use.

It is not the intent of this practice to intentionally contradict or compete with other similar protocols. All effort should be made by the user to resolve and reconcile apparent contradictions.

This practice deals with CPM-based schedule analysis methods. It is not its intent to exclude analyses of simple cases where explicit CPM modelling may not be necessary and mental calculation is adequate for analysis and presentation.

The delineation between simple and complex is admittedly blurry and subjective. For this purpose, a 'simple case' is defined as any CPM network model that can be subjected to mental calculation whose reliability cannot be reasonably questioned and allows for effective presentation to lay persons using simple reasoning and intuitive common sense.

Finally, the practice is an advisory document to be used in conjunction with professional judgment based on adequate working experience and knowledge of the subject matter. It is not intended to be a prescriptive document that can be applied without exception.

The recommended protocols will aid the practitioner in creating a competent work product, some cases require additional steps and some require less. Thus, a departure from the recommended protocols should not be automatically treated as an error or a deficiency as long as such departure is based on a conscious and sound application of schedule analysis principles.

Taxonomy and Nomenclature

The practice's taxonomy is a hierarchical classification system of known methods of schedule impact analysis techniques and methods used to analyze how delays and disruptions affect entire CPM networks. For example, you will find methods like the window analysis or collapsed as-built classified here. Procedures such as fragnet modelling, bar charting and linear graphing, are tools, and not methods. Therefore, they are not classified under this taxonomy.

The practice's taxonomy is a hierarchical classification system comprising the five layers:

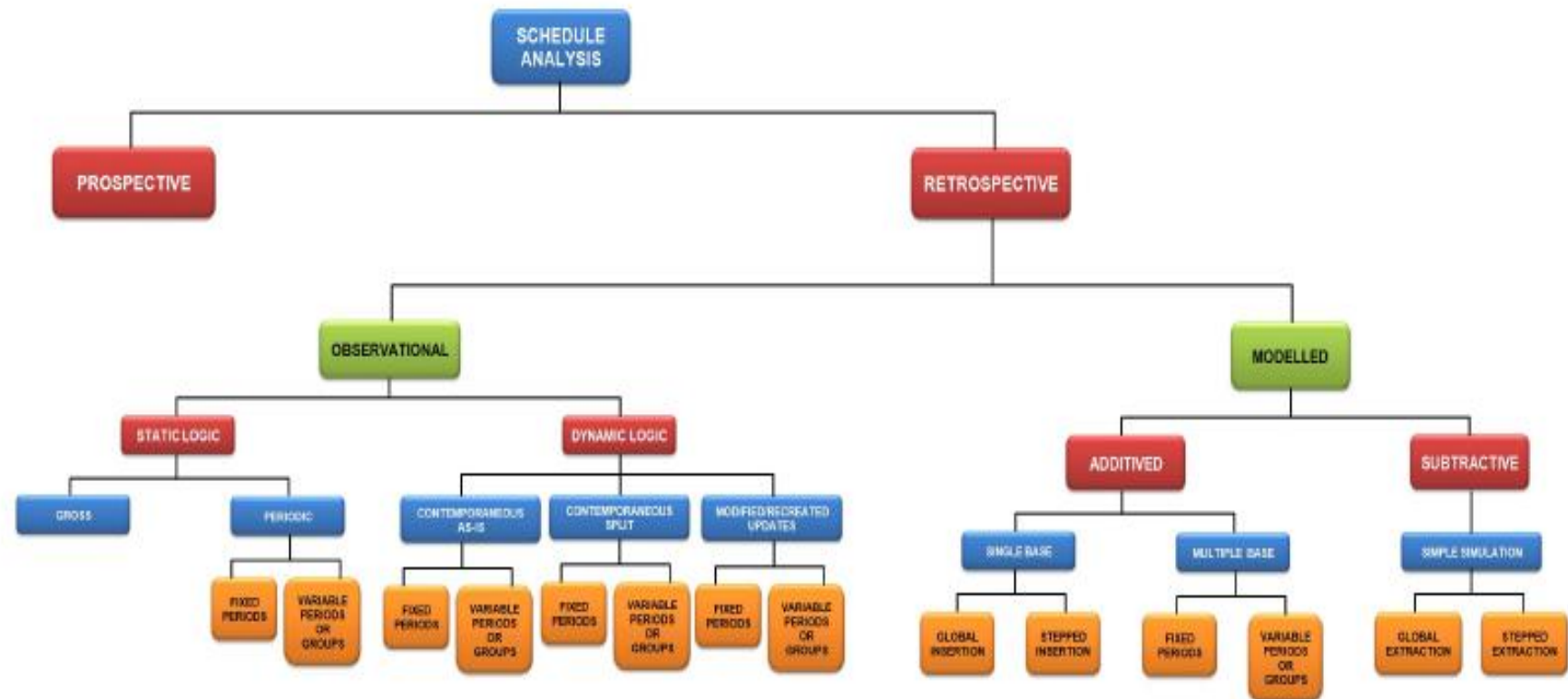
- Timing;
- Basic methods;
- Specific methods;
- Implementation of basic methods; and
- Implementation of specific methods.

Layer 1: Timing

The first hierarchy layer distinguishes the timing of when the analysis is performed, consisting of two branches, prospective and retrospective.

1. Prospective analyses are performed in real-time, prior to the delay event, or where the analysis takes place, in real-time, contemporaneous with the delay event. In all cases prospective analysis consists of the analyst's best estimate of future events. Prospective analysis occurs while the project is still underway and may not evolve into a forensic context.

2. Retrospective analyses are performed after the delay event has occurred and the impacts are known. The timing may be soon after the delay event but prior to the completion of the overall project, or after the completion of the entire project. Note that forward-looking analysis (such as 'additive modelling') performed after project completion is still retrospective in terms of timing.



What is classified here is the real-time point-of-view of the analyst, and not the mode of analysis (forward-looking or hindsight). In other words even forward-looking analysis methods implemented retrospectively has the full benefit of hindsight at the option of the analyst.

This distinction in timing is one of the most significant factors in the choice of methods. For example, contract provisions prescribing methods of delay analysis typically contemplate the preparation of such analysis in the prospective context, in order to facilitate the evaluation of time extensions.

Therefore a majority of contractually specified methods, often called the time impact analysis, consists of the insertion of delay events into the most current schedule update that existed at the time of the occurrence of the event: a prospective method.

At the end of the project the choices of analysis methods are expanded with the full advantage of hindsight offered by the various forms of as-built documentation. In addition, if as-built documentation is available the best evidence rule demands that all factual investigation use the as-built as the primary source of analysis.

Also the timing distinction is often mirrored by a change in personnel. That is, often the forensic schedule analyst who typically works in the retrospective context is not the same person as the project scheduler who worked under the prospective context.

Layer 2: Basic Methods

The second hierarchy layer is the basic method, consisting of two branches, observational and modelled. The distinction drawn here is whether the analyst's expertise is utilized for the purpose of interpretation and evaluation of the existing scheduling data only, or for constructing simulations and the subsequent interpretation and evaluation of the different scenarios created by the simulations.

The distinction between the two basic methods becomes less defined in cases where the identity of the forensic analyst and the project scheduler rest in the same person.

1. Observational

The observational method consists of analyzing the schedule by examining a schedule, by itself or in comparison with another, without the analyst making any changes to the schedule to simulate a certain scenario. Contemporaneous period analysis and as-built vs. as-planned are common examples that fall under the observational basic method.

2. Modelled

Unlike the observational method, the modelled method calls for intervention by the analyst beyond mere observation. In preparing a modelled analysis the analyst inserts or extracts activities representing delay events from a CPM network and compares the calculated results of the 'before' and 'after' states.

Common examples of the modelled method are the collapsed as-built, time impact analysis and the impacted as-planned.

Layer 3: Specific Methods

1. Observational Methods

Under the observational method, further distinction is drawn on whether the evaluation considers just the original schedule logic or the additional sets of progressive schedule logic that were developed during the execution of the project, often called the dynamic logic.

a. Static Logic Observation

A specific subset of the observational method, the static logic variation compares a plan consisting of one set of network logic to the as-built state of the same network. The term, 'static' refers to the fact that observation consists of the comparison of an as-built schedule to just one set of as-planned network logic.

The as-planned vs. as-built is an example of this specific method.

b. Dynamic Logic Observation

In contrast with the static logic variation, the dynamic logic variation typically involves the use of schedule updates whose network logic may differ to varying degrees from the baseline and from each other. This variation considers the changes in logic that were incorporated during the project.

The contemporaneous period analysis is an example of this specific method. Note that this category does not occur under the prospective timing because the use of past updates indicates that the analysis is performed using retrospective timing.

2. Modelled Methods

The two distinctions under the modelled method are whether the delays are added to a base schedule or subtracted from a simulated as-built.

a. Additive Modelling

The additive modelling method consists of comparing a schedule with another schedule that the analyst has created by adding schedule elements (i.e. delays) to the first schedule for the purpose of modelling a certain scenario.

You will find under this variation, the impacted as-planned, and some forms of the window analysis method. The time impact analysis can also be classified as an additive modelling method. But be aware that this term or its equivalent, time impact evaluation (TIE) has been used in contracts and specifications to refer to other basic and specific methods as well.

b. Subtractive Modelling

The subtractive modelling method consists of comparing a CPM schedule with another schedule that the analyst has created by subtracting schedule elements (i.e. delays) from the first schedule for the purpose of modelling a certain scenario.

The collapsed as-built is one example that is classified under the subtractive modelling method.

D. Layer 4: Basic Implementation

The fourth layer consists of the differences in implementing the methods outline above. The static logic method can be implemented in a gross mode or periodic mode. The progressive logic method can be implemented as contemporaneous: as-is, contemporaneous: split, modified, or recreated.

The additive or subtractive modelling method can be implemented as a single base with simulation or a multiple base with simulation.

1. Gross Mode or Periodic Mode

The first of the two basic implementations of the static logic variation of the observational method is the gross mode. Implementation of the gross mode considers the entire project duration as one whole analysis period without any segmentation.

The alternate to the gross mode is the periodic mode. Implementation of the periodic mode breaks the project duration into two or more segments for specific analysis focusing on each segment. Because this is an implementation of the static logic method, the segmented analysis periods are *not* associated with any changes in logic that may have occurred contemporaneously with these project periods.

2. Contemporaneous / As-Is or Contemporaneous / Split

This basic implementation pair occurs under the dynamic logic variation of the observation method. Both choices contemplate the use of the schedule updates that were prepared contemporaneously during the project. However the as-is implementation evaluates the differences between each successive update in its unaltered state, while the split implementation bifurcates each update into the pure progress and the non-progress revisions such as logic changes.

The purpose of the bifurcation is to isolate the schedule slippage (or recovery) caused solely by work progress based on existing logic during the update period from that caused by non-progress revisions newly inserted (but not necessarily implemented) in the schedule update.

3. Modified or Recreated

This pair, also occurring under the dynamic logic variation of the observational method, also involves the observation of updates. Unlike the contemporaneous pair, however, this implementation involves extensive modification of the contemporaneous updates, as in the modified implementation, or the recreation of entire updates where no contemporaneous updates exist, as in the recreated implementation.

4. Single Base, Simulation or Multi Base, Simulation

This basic implementation pair occurs under the additive and the subtractive modelling methods. The distinction is whether when the modelling (either additive or subtractive) is performed, the delay activities are added to or extracted from a single CPM network or multiple CPM networks.

For example, a modelled analysis that adds delays to a single baseline CPM schedule is a single base implementation of the additive method, whereas one where delays are extracted from several as-built simulations is a multi base simulation implementation of the subtractive method.

A single base additive modelling method is typically called the impacted as-planned. Similarly the single simulation subtractive method is called the collapsed as-built. The multi base, simulation variations are called window analysis.

Layer 5: Specific Implementation

1. Fixed Periods vs. Variable Periods / Grouped Periods

These specific implementations are the two possible choices for segmentation under all basic implementations except gross mode and the single base / simulation basic implementations.

They are not available under the gross mode because the absence of segmentation is the distinguishing feature of the basic gross mode. They are not available under the single base / simulation basic implementation because segmentation assumes a change in network logic for each segment; the single base, simulation uses only one set of network logic for the model.

In the fixed period specific implementation, the periods are fixed in date and duration by the data dates used for the contemporaneous schedule updates, usually in regular periods such as monthly. Each update period is analyzed. The act of grouping the segments for summarization after each segment is analyzed is called blocking.

In the prospective timing mode, since there is usually only one forward looking set of network logic, be it the baseline or the current update, there is only one fixed period. Upon the creation of subsequent updates, by definition, the use of previous updates brings the analysis under the retrospective timing mode.

The variable period, grouped period specific implementation establishes analysis periods other than the update periods established during the project by the submission of regular schedule updates.

The grouped period implementation groups together the pre-established update periods while the variable windows implementation establishes new periods whose lines of demarcation may not coincide with the data dates used in the pre-established periods and/or which can be determined by changes in the critical path or by the issuance of revised or recovery baseline schedules.

This implementation is one of the primary distinguishing features of the window analysis method.

2. Global (Insertion or Extraction) vs. Stepped (Insertion or Extraction)

This specific implementation pair occurs under the single base, simulation basic implementation, which in turn occurs under the additive modelling and the subtractive modelling specific methods. Under the global implementation delays are either inserted or extracted all at once, while under the stepped implementation the insertion or the extraction is performed sequentially (individually or grouped).

Although there are further variations in the sequence of stepping the insertions or extractions, usually the insertion sequence is from the start of the project towards the end, whereas stepped extraction starts at the end and proceeds towards the start of the project.

Underlying Fundamentals and General Principles

At any given point in time on projects, certain work must be completed at that point in time so the completion of the project does not slip later in time. The industry calls this work, “critical work.” Project circumstances that delay critical work will extend the project duration. Critical delays are discrete, happen chronologically and accumulate to the overall project delay at project completion.

When the project is scheduled using CPM scheduling, the schedule typically identifies the critical work as the work that is on the “longest” or “critical path” of the schedule’s network of work activities. The performance of non-critical work can be delayed for a certain amount of time without affecting the timing of project completion. The amount of time that the noncritical work can be delayed is “float” or “slack” time.

A CPM schedule for a particular project generally represents only one of the possible ways to build it. Therefore, in practice, the schedule analyst must also consider the assumptions (work durations, logic, sequencing and labour availability) that form the basis of the schedule when performing a forensic schedule analysis.

This is particularly true when the schedule contains preferential logic (i.e., sequencing which is not based on physical or safety considerations) and resource assumptions. This is because both can have a significant impact on the schedule’s calculation of the critical path and float values of non-critical work at a given point in time. CPM scheduling facilitates the identification of work as either critical or non-critical.

Thus, at least in theory, CPM schedules give the schedule analyst the ability to determine if a project circumstance delays the project or if it just consumes float in the schedule. For this reason, delay evaluations utilizing CPM scheduling techniques are now preferred for the identification and quantification of project delays.

The critical path and float values of uncompleted work activities in CPM schedules change over time as a function of the progress (or lack of progress) on the critical and non-critical work paths in the schedule network. For this reason, only project circumstances that delay work that is critical when the circumstances occur extend the overall project duration. Thus, when quantifying project delay, schedule analysts must evaluate the impact of potential causes of delay within the context of the schedule at the time when the circumstances happen.

General Rules

1. Use CPM Calculations

Calculation of the critical path and float must be based on a CPM schedule with proper logic.

2. Concept of Data Date Must be Used

The CPM schedule used for the calculation must employ the concept of the data date. Note that the critical path and float can be computed only for the portion of the schedule forward (future) of the data date.

3. The As-Built Critical Path Cannot be Calculated by CPM Alone

The as-built critical path cannot be determined by conventional CPM calculation alone. The as-built portion is behind (past side of) the data line, which is prior in time to the point from which CPM calculations are performed.

4. Shared Ownership of Network Float

In the absence of contrary contractual language, network float, as opposed to project float, is a shared commodity between the owner and the contractor.

5. Update Float Preferred Over Baseline Float.

If reliable updates exist, float values for activities in those updates at the time the schedule activity was being performed are considered more reliable compared to float values in the baseline for those same activities.

6. Sub-Network Float Values

What is critical in a network model may not be critical when a part of that network is evaluated on its own, and vice versa. The practical implication of this rule is that what is considered critical to a subcontractor in performing its own scope of work may not be critical in the master project network. Similarly, a schedule activity on the critical path of the general contractor's master schedule may carry float on a subcontractor's sub-network when considered on its own.

7. Delay Must Affect the Critical Path

In order for a claimant to be entitled to an extension of contract time for a delay event (and further to be considered compensable), the delay must affect the critical path. This is because before a party is entitled to compensation for damages it must show that it was actually damaged.

Because conventionally, a contractor's delay damages are a function of the overall duration of the project, there must be an increase in the duration of the project.

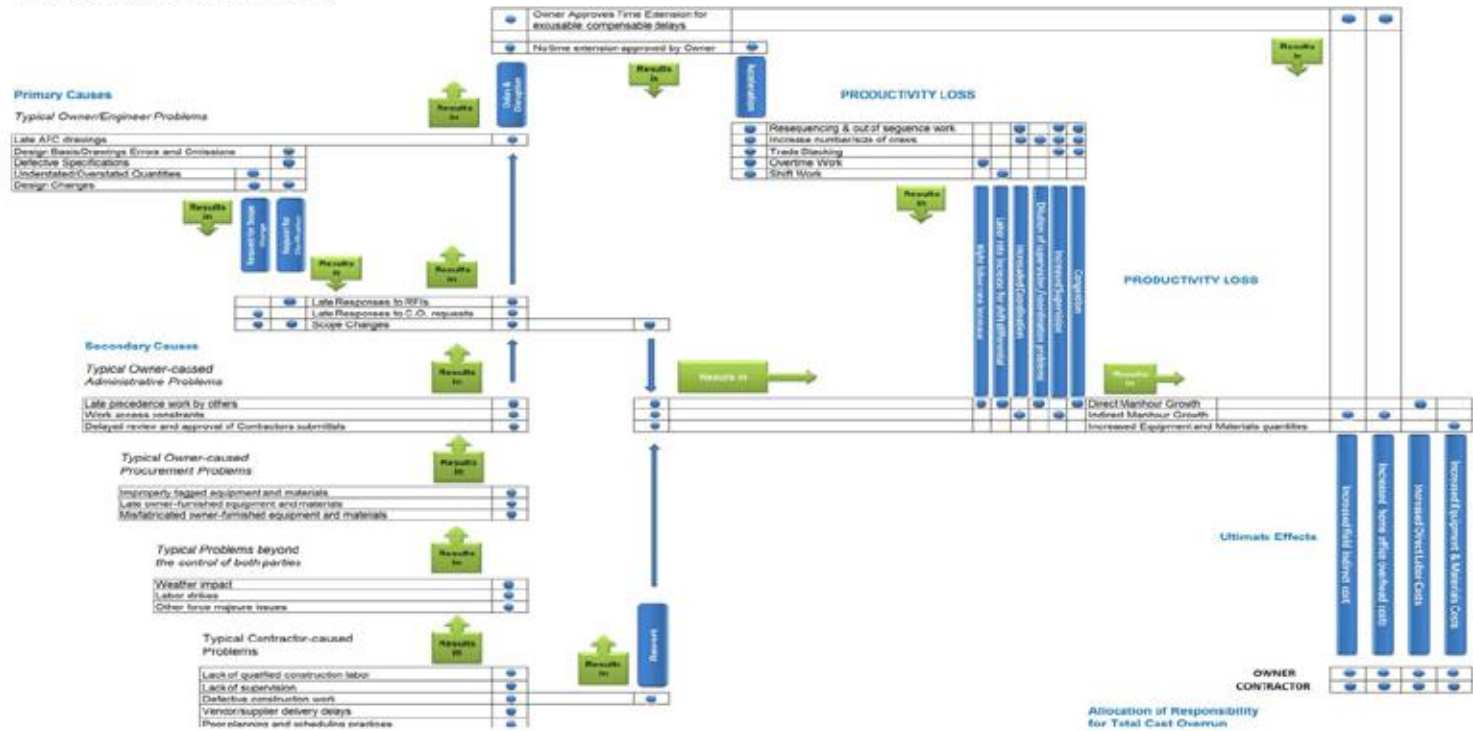
ROAD MAP TO ISSUE NEGOTIATION & SETTLEMENT

In order to get a good printable copy of the drawing shown on following page, please use this internet link:

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TYPICAL CAUSE & EFFECT MATRIX



Excusability and Compensability of Delay

General Rules

Excusability exists where there is contractual or equitable justification in a claimant's request for a contract time extension for relief from the potential claim for liquidated or actual delay damages by the owner. The showing of excusability does not necessarily mean that the claimant is also entitled to compensation for the delay. Conversely, delay is *non-excusable* when such justification does not exist.

Compensability or *compensable delay* exists where the claimant is entitled to recover not only a time extension but compensation for expenses associated with the extension of completion date or the prolongation of the duration of work. Excusability is a prerequisite to compensability. Therefore where compensability can be established, excusability is assumed.

B. Accounting for Concurrent Delay

In the absence of any contractual language or other agreements, the conventional rule governing compensability is that the claimant must first account for concurrent delays in quantifying the delay duration to which compensation applies. That is, the contractor is barred from recovering delay damages to the extent that concurrent contractor-caused delays offset owner-caused delays, and the owner is barred from recovery liquidated or actual delay damages to the extent that concurrent owner-caused delays offset contractor-caused delays.

The evaluation proceeds in two distinct steps.

First, the liability for each delay event is individually analyzed. The classification is made primarily according to the responsibility for the cause of the delay, but may also consider the contractual risk allocation of the delay event regardless of the party who caused such delay.

The second step consists of evaluating whether each delay event is concurrent with other types of delays to arrive at the final conclusion of compensability, excusability or non-excusability.

As evident from the list of existing definitions, the current, common usage of the terms compensable, excusable and non-excusable is confusing because it often uses those terms to characterize the assignment of liability performed in the first step. For this reason delays identified in the first step should be classified as: contractor-delay, owner-delay or *force majeure* delay.

A *contractor-delay* is any delay event caused by the contractor, or the risk of which has been assigned solely to the contractor. If the contractor-delay is on the critical path, in absence of other types of concurrent delays, contractor is granted neither an extension of contract time nor additional compensation for delay related damages.

An *owner-delay* is any delay event caused by the owner, or the risk of which has been assigned solely to the owner. If the owner-delay is on the critical path, in absence of other types of concurrent delays, the contractor is granted both an extension of contract time and additional compensation for delay related damages.

A *force majeure delay* is any delay event caused by something or someone other than the owner (including its agents) or the contractor (or its agents), or the risk of which has not been assigned solely to the owner or the contractor. If the *force majeure* delay is on the critical path, in absence of other types of concurrent delays, the contractor is granted an extension of contract time, but does not receive additional compensation for delay related damages.

After liability is determined in the first step the second step calls for the determination of concurrency in accordance with subsection 4.2. The various permutations of concurrency scenarios are summarized as follows:

Delay Event	Concurrent with	Net Effect
Owner Delay	Another Owner Delay or Nothing	Compensable to Contractor, Non-Excusable to Owner
Contractor Delay	Another Contractor Delay or Nothing	Non-Excusable to Contractor, Compensable to Owner
Force Majeure Delay	Another Force Majeure Delay or Nothing	Excusable but Not Compensable to Either Party
Owner Delay	Contractor Delay	Excusable but Not Compensable to Either Party
Owner Delay	Force Majeure Delay	Excusable but Not Compensable to Either Party
Contractor Delay	Force Majeure Delay	Excusable but Not Compensable to Either Party

If there are more than two parties among which the delay must be apportioned, first determine whether the additional parties are distinct signatories to the subject contract or parties subsumed under the two primary parties.

Under the first case, there would be another factor added to the above matrix. But the principle used to derive the net effect would be the same. Namely, in order to be entitled to compensation, the party must not have caused or otherwise be held accountable for any concurrent delay and concurrent *force majeure* delays.

Under the second scenario involving agents to the two primary parties such as subcontractors, suppliers, architects and construction management firms, the net effect equation should be solved first between the two primary parties. This is followed by a subsidiary analysis apportioning the quantified delay allocation established by the first analysis.

Equitable Symmetry of the Concept

Note that the terms, compensable, excusable and non-excusable, in current industry usage, are from the viewpoint of the contractor. That is, a delay that is deemed compensable is compensable to the contractor, but non-excusable to the owner. Conversely, a non-excusable delay is a compensable delay to the owner since it results in the collection of liquidated damages.

A neutral perspective on the usage of the terms often aids understanding of the parity and symmetry of the concepts. Thus entitlement to compensability, whether it applies to the contractor or the owner, requires that the party seeking compensation show a lack of concurrency. But for entitlement to excusability without compensation, whether it applies to the contractor or the owner, it only requires that the party seeking excusability show that a delay by the other party impacted the critical path.

Based on the symmetry of the concept, one can say that entitlement to a time extension does not automatically entitle the contractor to delay compensation. In addition to showing that an owner-delay impacted the critical path, the contractor would have to show the absence of concurrent delays caused by a contractor-delay or a *force majeure* delay in order to be entitled to compensation.

One can also say that the existence of concurrent contractor-delay does not automatically negate the contractor's entitlement to a time extension. In fact, if a party is not seeking compensation for the delay, be it the contractor forgoing delay damages and seeking only a time extension, or the owner forgoing liquidated damages and only defending the contractor's compensable delay claim, that party need not concern itself with its own concurrent delays.

This means that a single contractor-delay concurrent with many owner-delays would negate the contractor's entitlement to delay compensation. Similarly, one owner-delay concurrent with many contractor-delays would negate the owner's entitlement to delay compensation, including liquidated damages. While, in such extreme cases, the rule seems draconian, it is a symmetrical rule that applies to both the owner and the contractor and hence ultimately equitable.

Delay Mitigation and Constructive Acceleration

Definitions

Acceleration: Work by the contractor that is required to complete all or a portion of the contracted scope earlier than scheduled. The accelerated work may be required as a result of:

1. Direction of the owner or its agents (directed acceleration);
2. Conduct of the owner or its agents without explicit direction (constructive acceleration); or
3. Events within the responsibility of the contractor resulting in possible delay that the contractor decides to mitigate.

Directed Acceleration: Formal instruction by the owner directing the contractor to:

1. Complete all or a portion of the work earlier than scheduled.
2. Which directs the contractor to undertake additional work. or,
3. Perform other actions so as to complete all, or a portion, of the contract scope of work in the previously scheduled timeframe. This could include mitigation efforts that usually have no costs associated with them.

Constructive Acceleration:

1) A contractor's acceleration efforts to maintain scheduled completion date(s) undertaken as a result of an owner's action or inaction and failure to make a specific direction to accelerate.

2) Constructive acceleration generally occurs when five criteria are met:

1. Contractor is entitled to an excusable delay.
2. Contractor requests and establishes entitlement to a time extension.
3. Owner fails to grant a timely time extension.
4. Owner or its agent specifically orders or clearly implies completion within a shorter time period than is associated with the requested time extension. and,
5. Contractor provides notice to the owner or its agent that the contractor considers this action an acceleration order.

Acceleration is said to have been constructive when the contractor claims a time extension but the owner denies the request and affirmatively requires completion within the original contract duration, and it is later determined that the contractor was entitled to the extension.

The time extension can be for either additional work or delayed original work.

Constructive acceleration occurs when the contractor is forced by the owner to complete all or a portion of its work ahead of a properly adjusted progress schedule. This may mean the contractor suffers an excusable delay but is not granted a time extension for the delay.

If ordered to complete performance within the originally specified completion period, the contractor is forced to complete the work in a shorter period either than required or to which he is entitled. Thus, the contractor is forced to accelerate the work.

Acceleration following failure by the employer to recognize that the contractor has encountered employer delay for which it is entitled to an EOT (extension of time) and it is requiring the contractor to accelerate its progress in order to complete the works by the prevailing contract completion date. This situation may be brought about by the employer's denial of a valid request for an EOT or by the employer's late granting of an EOT.

Constructive acceleration is caused by an owner failing to promptly grant a time extension for excusable delay and the contractor accelerating to avoid liquidated damages.

Disruption: An interference (action or event) with the orderly progress of a project or activity(ies). Disruption has been described as the effect of change on unchanged work which manifests itself primarily as adverse labor productivity impacts. *Schedule disruption* is also any unfavorable change to the schedule that may, but does not necessarily, involve delays to the critical path or delayed project completion.

Disruption may include, but is not limited to, duration compression, out-of- sequence work, concurrent operations, stacking of trades and other acceleration measures.

Out-of-Sequence Progress: Work completed for an activity before it is scheduled to occur. In a conventional relationship, an activity that starts before its predecessor completes shows out-of- sequence progress.

Delay Mitigation: A contractor's or owner's efforts to reduce the effect of delays already incurred or anticipated to occur to activities or groups of activities. Mitigation often includes revising the project's scope, budget, schedule or quality, usually without material impact on the project's objectives, in order to reduce possible delay. Mitigation usually has no associated costs.

Recovery Schedule: A special schedule showing special efforts to recover time lost for delays already incurred or anticipated to occur when compared to a previous schedule. Often a recovery schedule is a contract requirement when the projected finish date no longer indicates timely completion.

General Considerations

Differences between Acceleration, Constructive Acceleration and Delay Mitigation.

In practice there are subtle distinctions between acceleration, constructive acceleration and delay mitigation. For example, acceleration cost implies additional expenditure or money for recovery for an incurred or projected delay, and efforts to complete early. The term constructive acceleration applies to expenditure of money for efforts to recover either incurred or projected delay. Delay mitigation, refers to no-cost recovery efforts for incurred or projected delay.

In the case of acceleration, constructive acceleration, and delay mitigation, affected activities are usually on the projected critical path, thus the objective of most acceleration or mitigation is to recover for anticipated delay to project completion.

However, acceleration, constructive acceleration and mitigation can occur with regard to activities that are not on the critical path. For example, an owner might insist that a certain portion of the work be made available prior to the scheduled date for completion of that activity. The contractor may mitigate non-critical delay by resequencing a series of non-critical activities to increase the available float.

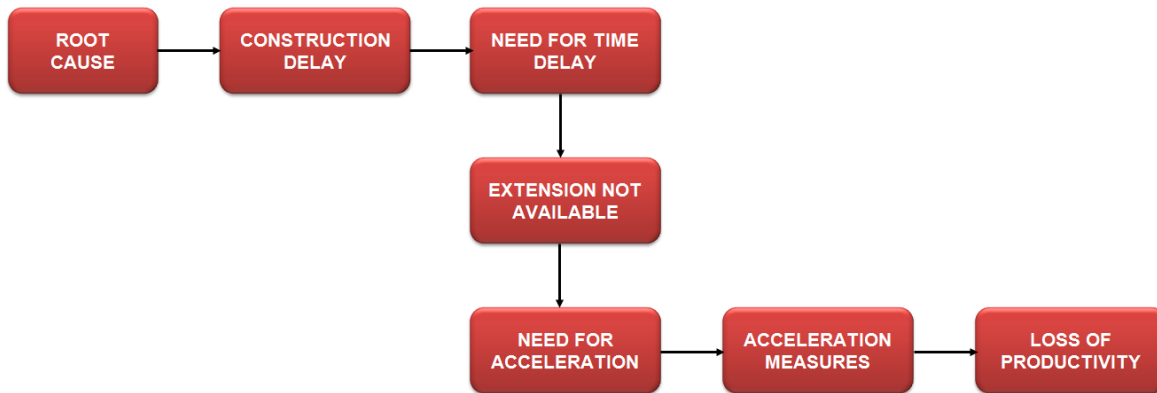
There are circumstances in which acceleration measures are used in an attempt to complete the project earlier than planned. Those circumstances are usually classified as:

- (1) directed acceleration where the owner directs such acceleration and usually pays for the associated additional cost; or
- (2) voluntary acceleration in which the contractor implements the plan on its own initiative in the hope of earning an early completion bonus. Contractor efforts undertaken during the course of the project to recover from its own delays to activities are generally not considered acceleration.

The causative link between a delay event and cost associated with constructive acceleration **is diagrammed next page** . The root cause of the impact results in a construction delay or projects a construction delay. This, in turn, results in the contractor identifying that it needs a time extension and requesting a time extension.

The owner denies the time extension request but the need for recovery from the delay remains.

The contractor then undertakes acceleration measures that could include increased labor. Increased labor, without a time extension can result in loss of productivity.



A contractor's cost for acceleration, whether directed or constructive, is generally associated with its effort to engage more resources to perform the work during a unit of time than it had planned. These increased resources fall into the following major categories:

- (1) increased management resources;
- (2) increased equipment usage;
- (3) increased material supply; and
- (4) increased labor.

The greatest cost associated with acceleration is usually labor. Since the amount of actual work remains unchanged in most acceleration efforts (the planned scope of work has not increased), the increase in labor cost is a result of a decrease in labor productivity.

Decreased labor productivity is caused by disruption to the planned sequence and pace of the labor. The greater the disruption to the work is, the greater the inefficiency.

Disruption is the result of having more men working in the planned area during a specific time, or loss of productivity associated with individual workers working more hours than planned.

Acceleration and Compensability

Directed acceleration is always compensable to the contractor, although the parties may disagree on quantum. This is true regardless of whether the contractor is accelerating to overcome an owner-caused delay, or to recover from a *force majeure* event.

Constructive acceleration follows this same pattern. If entitlement to constructive acceleration is established, the contractor may recover for a delay caused by the owner that the owner has refused to acknowledge and also for a *force majeure* event.

This is different than the normal rule concerning damages associated with *force majeure* events. Typically, *force majeure* events entitle the contractor to time but no money. In a constructive acceleration situation, however, the owner has refused to acknowledge a delay, so the contractor has no choice but to accelerate so as to avoid the delay. As a result, the contractor is entitled to recover its cost for that constructive acceleration.

Delay Mitigation and Compensability

Delay mitigation is generally achieved through non-compensable efforts. These efforts are usually associated with changes in preferential logic so as to perform the work in a shorter timeframe.

Mitigation applies to either incurred or predicted delays. There is no mitigation associated with efforts to complete early. Delay mitigation does have a small cost that is usually ignored. This cost is associated with the contractor's management of the schedule and the overall project and is generally considered minimal and, therefore, not compensable.

Elements of Constructive Acceleration

1. Contractor Entitlement to an Excusable Delay

The contractor must establish entitlement to an excusable delay. The delay can be caused by an action or inaction on the part of the owner that results in delay and would be considered compensable, or it can be a *force majeure* event.

Generally, it is the contemporaneous development of a schedule that reasonably shows the basis for the entitlement to the delay. In theory, a contractor can recover for constructive acceleration for work yet-to-be done. In this situation the owner takes some action that will result in the contractor expending acceleration costs to recover from the delay.

The contractor could assert its entitlement even though the actual acceleration has yet-to occur and the actual acceleration costs have yet-to occur.

In practice, since constructive acceleration occurs after the owner has denied a time extension, it is almost always resolved after the acceleration is complete and the contractor usually is arguing that it was actually accelerated.

Contractor Requests and Establishes Entitlement to a Time Extension

The contractor must ask for a time extension associated with the owner's action or the *force majeure* event. In that request, or associated with that request, the contractor must establish that it is entitled to a time extension. The owner must have the opportunity to review the contractor's request and act upon it.

If the contractor fails to submit proof of its entitlement to a time extension, the owner is able to argue that it was never given the opportunity to properly decide between granting a time extension or ordering acceleration. The level of proof required to be submitted must be sufficient to convince the owner that the contractor "established" its entitlement.

In certain situations, it is possible that actions of the owner may negate the requirement for the contractor to request a time extension or establish its entitlement. In this situation, the theory is that the owner has made clear through its actions that it will absolutely not grant a time extension.

Owner Failure to Grant a Timely Time Extension

The owner must unreasonably fail to grant a time extension. This is closely related to the requirement that the contractor establish its entitlement to a time extension. If the owner reasonably denies a request for time, as eventually decided by the trier of fact, then by definition the contractor has failed to prove entitlement. Therefore, the owner's decision not to grant a time extension might be unreasonable.

Implied Order by the Owner to Complete More Quickly

The owner must also, by implication or direction, require the contractor to accelerate. There are several different factual alternatives possible. First, a simple denial of a legitimate time extension, by implication, requires timely completion and thus acceleration.

If this denial is timely given, the contractor can proceed. However, the best proof for the contractor is a statement or action by the owner that specifically orders the contractor meet a date that requires acceleration.

Second, the owner could deny the time extension request and remind the contractor that he needs to complete on time. This is better than the alternative mentioned above, but not as strong as the next alternative.

Third, the owner could deny the time extension request and advise the contractor that any acceleration is the contractor's responsibility. This is probably the best proof for this aspect of constructive acceleration. All three of these alternatives meet the test for an owner having instructed acceleration.

Examples of owner actions that meet this requirement include:

1. A letter from the owner informing the contractor that he must meet a completion date that is accelerated;
2. An owner demand for a schedule that recovers the delay; or
3. The owner threatening to access liquidated damages unless the completion date is maintained.

A fourth alternative arises when the owner is presented with a request for a time extension but fails to respond. The contractor is faced with either assuming it will be granted a time extension, or accelerating. Under this alternative, the owner's failure to timely decide, functions as a denial which might be detrimental.

Contractor Notice of Acceleration

The contractor must provide notice of acceleration. As with any contract claim for damages, the owner must be provided notice of the claim. Even though the contractor has requested and supported its application for a time extension, the contractor must still notify the owner of its intent to accelerate or is actually experiencing ongoing acceleration. This is so the owner can decide if it actually desired acceleration to occur or instead the owner may decide to grant a time extension.

Proof of Damages

The contractor must establish its damages. For loss of productivity claims, the contractor is faced with developing convincing proof of decreased productivity. Actual acceleration is not required. A valid contractor effort to accelerate, supported by contemporaneous records, is sufficient to establish constructive acceleration. It is quite common that contractors accelerate to overcome delays but continue to be impacted and delayed by additional events and impacts that actually result in further delay to the project.

Pacing

Concurrent delay occurs where another activity independent of the subject delay is also delaying the ultimate completion of the chain of activities. Pacing delay occurs when the delay in the independent activity is the result of a conscious and contemporaneous decision to pace progress against the subject delay.

The quality that distinguishes pacing from concurrent delay is the fact that while the former is a result of conscious choice by the performing party to pace the work, in the latter case, the work is involuntarily delayed by factors independent of any problems arising from the subject delay.

Pacing delay is a real-life manifestation of the principle that work durations expand to fill the time available to perform them. It can take many forms. Work can be slowed down, resulting in extended work durations, or temporarily suspended, or performed on an intermittent basis.

Whatever form it takes, the key is that it results from the performing party's reasoned decision to keep pace with another activity, which is called the parent delay, experiencing a delay.

By pacing the work, the performing party is exercising its option to reallocate its resources in a more cost effective manner in response to the changes in the schedule caused by the parent delay and thereby mitigating or avoiding the cost associated with the resource demands if one were to 'hurry up and wait'.

In other words it is consumption of float created by the occurrence of the parent delay.

The term 'creation' should not be interpreted to mean that total float is increased. In fact, the opposite is true. The parent delay adversely impacts the overall critical path of the project, thereby decreasing total float. What it creates (increases) is relative total float on the path of the paced activity relative to the total float on the path carrying the parent delay.

Pacing is seen by most contractors as an integral part of the detailed implementation of their means and methods. Pacing is done because it is believed that it will result in savings of money or effort to the pacing party without any penalty of net loss of time.

According to the *Authority for Total Cost Management (AACE)*, *forensic engineering recommended practice* there are two distinct circumstances to which the term, pacing delay, is often applied.

The first circumstance, often referred to as *direct pacing*, occurs where the duration of a schedule activity is extended due to a delay in a predecessor activity on which the progress of the subject activity is directly dependent.

An example would be the pacing of electrical conduit rough-in when the duration of metal stud installation is extended by delays. In such a case, because there is not enough work to sustain the continuous utilization of a full crew, the electrical subcontractor may order a crew size reduction, by temporarily reassigning some workers to other areas, slowing the progress.

In either case it extends the overall duration of electrical rough-in. Although this is definitely pacing, it is not considered a pacing delay because it is usually not seen as concurrent delay.

Pacing delay is the second type where the paced activity has no direct dependency on the parent delay activity, often called *indirect pacing*.

The fact that it shares the same time frame is a function of schedule timing as opposed to construction logic. An example of this type of pacing would be the landscaping subcontractor who demobilizes its crew and returns at a later time because critical-path work in the building has been delayed.

In this type of pacing, the sole relationship of the paced activity to the parent delay is the fact that the parent delay creates additional relative total float available for consumption by the paced activity.

The deceleration is achieved typically by reassignment or reduction of resources or entirely rescheduling the procurement of resources that would have been otherwise necessary.

It should be clear that where the pacing defense is raised in answer to the identification of a potential concurrent delay, the pacing delay is not a distinct delay event but an alternate characterization or 'label' to describe and explain the concurrent delay event.

Therefore, the pacing issue is relevant only to the extent that concurrency of delays is an issue. If there has been no potential concurrently delays identified, pacing is irrelevant.

In some common law jurisdictions, the contractor's right to pace its work in reaction to a critical path delay is a generally accepted concept. Thus, the contractor will not be penalized for pacing its work. This is consistent with the globally accepted view that float, a shared commodity, is available for consumption on a '*first come first served*' basis.

What has not been explicitly settled by case law is the issue of compensability. The courts' recognition of the contractors' right to pace failed to directly address the question of whether that recognition should lead to the compensability of the parent delay.

But since pacing is irrelevant without the initial assertion of concurrent delay, and since concurrent delay is irrelevant where compensability is not at issue, the general acceptance of pacing strongly suggests that the contractor's right to pace would remove the owner's defense of concurrent delay, and thereby make an otherwise non-compensable parent delay a compensable one.

Viewed in the context of the delay net effect matrix, pacing has the following effect:

Using analogous logic, the same could be said on the owner's side. If pacing is a practical use of shared float, the owner can also pace. The owner's legitimate pacing would remove

Delay Event	Concurrent with	Net Effect
Owner Delay	Another Owner Delay or Nothing	Compensable to Contractor, Non- Excusable to Owner
Contractor Delay	Another Contractor Delay or Nothing	Non-Excusable to Contractor, Compensable to Owner
Force Majeure Delay	Another Force Majeure Delay or Nothing	Excusable, but Not Compensable to either party
Owner Delay	Contractor Delay Contractor Pacing	Compensable to Contractor, Non- Excusable to Owner
Owner Delay	Force Majeure Delay	Excusable but Not Compensable to either party
Contractor Delay	Force Majeure Delay	Excusable but Not Compensable to either party

the contractor's defense of concurrent delay, and thereby make an otherwise excusable contractor delay a non- excusable one.

In this case the delay net effect matrix would look like the one next page.

Demonstrating Pacing

Delay Event	Concurrent with	Net Effect
Owner Delay	Another Owner Delay or Nothing	Compensable to Contractor, Non- Excusable to Owner
Contractor Delay	Another Contractor Delay or Nothing	Non-Excusable to Contractor, Compensable to Owner
Force Majeure Delay	Another Force Majeure Delay or Nothing	Excusable, but Not Compensable to either party
Owner Delay - Owner Pacing	Contractor Delay	Non-Excusable to Contractor, Compensable to Owner
Owner Delay	Force Majeure Delay	Excusable but Not Compensable to either party
Contractor Delay	Force Majeure Delay	Excusable but Not Compensable to either party

In the absence of clear legal precedence and prevailing contractual language, the community of forensic professionals developed some common-sense guidelines for determining the legitimacy of pacing delays where compensable delays are at issue in a claim. Listed in descending order of importance, they are:

1. Existence of the Parent Delay

By definition, pacing delay cannot exist by itself. It exists only in reaction to another delay which is equally or more critical or is determined to become more critical than the paced activity. This calls for the calculation of relative total float between the parent delay and the pacing delay.

Also, in cases where many different activities are being performed at the same time, it is unclear who is pacing whom. But one thing is clear: the parent delay must always precede the pacing delay. The existence of a parent delay should be a mandatory requirement in legitimizing a pacing delay.

Quantitatively, the near-critical threshold can serve as a benchmark for the need to analyze for pacing delays, just like it serves to identify concurrent delays.

2. Showing of Contemporaneous Ability to Resume Normal Pace

Pacing is not realistic unless the contractor can show that it had the ability to resume progress at a normal, '*un-paced rate*'.

Implicit in the contractor's ability to show that it could have completed the schedule activity on-time if necessary is the fact that the contractor was able to reasonably determine or reliably approximate when the parent delay would end.

Considering the typical realities of the types of projects in which delay issues arise, an exact determination is difficult. Therefore, while this should also be a required element of proof, realistically, the format and content of the analysis should not be held to the same rigorous test as the first one.

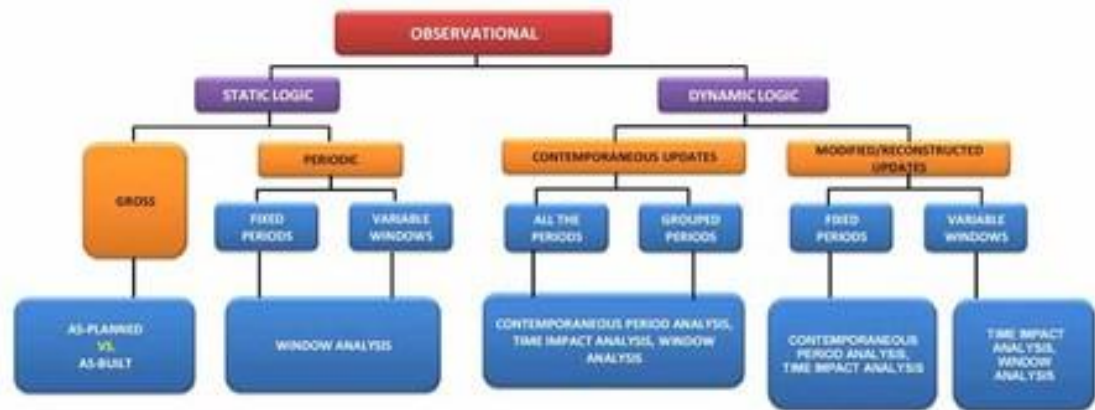
3. Evidence of Contemporaneous Intent

The case can be further strengthened by showing that the pacing was a conscious and deliberate decision that was made at the time of pacing.

Without a notice signifying contemporaneous intent to pace, the claimant can use pacing as a hindsight excuse for concurrent delay by offering after- the-fact testimony. Currently, contemporaneous notices are rare in any form, let alone specific, written notices. Therefore this should not be a strict requirement of proof.

FORENSIC ANALYSIS

Identification & Quantification of Concurrent Delays



A. Identification & Quantification of Concurrency

This is the most contentious technical subject in forensic schedule analysis. Because of this, it is important that both sides, if possible, agree on the theory employed in the identification and quantification of concurrency. Failing that, the analyst should be aware of the theory adopted by the adversary.

There is no consensus on many of these factors affecting the identification and quantification of concurrency. The one thing that seems to be universally accepted is that reliable identification and quantification of concurrency must be based on CPM concepts. Gross concurrency, or the method of counting concurrent delay events based purely on contemporaneous occurrence without regard to CPM principles, is not adequate basis in negating compensability.

Contractual definition is one major factor having significant impact on the determination of concurrency. Contracting parties are free to mutually agree on any method or procedure as long as those agreements do not violate public policy. Therefore the general rules, exceptions and considerations in this practice are applicable to the extent that they do not directly contradict contractual definitions and specifications.

Some contracts include in the definition of concurrent delay that it be a critical path delay. The requirement that the concurrent delay be critical, in effect, excludes other delay events with float values greater than the critical path from being evaluated for offsets against compensable delays. Absent such contract definition, non-critical delays can be used to offset compensable delay on a day-for-day basis after the expenditure of relative float against the critical path.

In addition to the contractual variable, there are at least five factors that influence the identification and quantification of concurrency:

- Whether concurrency is determined literally or functionally.
- Whether concurrency is determined on the cause or the effect of delay.
- The frequency, duration and placement of the analysis interval
- The order of delay insertion or extraction in a stepped implementation.
- Whether the analysis is done using full hindsight or based on knowledge-at-the-time.

Literal Concurrency vs. Functional Concurrency

The difference here is whether delays have to be literally concurrent in time, as in “happening at the same time”, or they need to be functionally concurrent so that only the separate network paths on which the delays reside be concurrently impacting the completion date.

Note that absolute, literal concurrency is an unachievable goal since time is infinitely divisible. It is more a function of the planning unit used by the schedule or the verification unit used in the review of the as-built data. For example, upon further examination, a pair of events that were determined to have occurred concurrently on a given day may not be literally concurrent because one occurred in the morning and the other in the afternoon.

Implicit in this difference is the conflicting views on whether float value is an attribute possessed by each individual activity (literal theory) or an attribute that each activity inherits from the network path on which it resides (functional theory). While both theories have their merits, the functional theory is more attuned to the workings of the critical path method.

Of the two, the functional theory is more liberal in identifying and quantifying concurrency. The assumption made by the functional theory practitioner is that most delays have the potential of becoming co-critical, once float on the path it resides have been consumed. In other words, delays are assumed guilty of concurrency until proven innocent by float analysis.

Whereas the practice based on the literal theory will result in far fewer identification of concurrent delays, since delays are dropped from the list of suspects if they do not share real-time concurrency. If the literal theory practice is combined with the contractual definition of concurrent delay as a critical path delay, the finding of concurrency becomes exceedingly rare.

The difference in outcome is significant. Given the same network model, the literal theory practitioner will find many more compensable delays for both parties. Because of the potential for more compensability for both parties, the resolution process tends to be more emotionally charged. Whereas the functional theory practitioner will find many of those delays to be concurrent and hence be excusable but non-compensable for both parties. But note that the ultimate outcome may be similar, since when the compensation due for both sides under the literal theory model are combined for a net calculation, they may also cancel each other out.

The only significant difference despite the fact that the canceling effect operates under both theories is the timing of the canceling effect and its implication concerning damage calculation. Under the literal theory, an owner-delay and a contractor-delay of equal duration, occurring at different times are calculated as a period of compensable delay for the owner and a separate period of compensable delay of equal length for the contractor.

The two periods will cancel each other out in time, but not necessarily money, since more likely that not the owner's liquidated damages rate will not be equal to the contractor's extended project rate. So despite the canceling effect, there is still potential of award of compensability to one side or the other. In contrast, under the functional theory, the canceling effect is realized before calculation of damages; hence there will be no offsetting calculation for damages.

The practical effect is that the use of literal theory will benefit the owner if the liquidated damages or actual delay damages rate is greater than the delay damages rate used by the contractor. Conversely, if the contractor's rate is greater than the owner's the literal theory will benefit the contractor. In contrast, the functional theory tends to minimize compensable delay to both sides by concentrating on the detection of functionally concurrent periods and removing them from consideration of delay damages.

Cause of Delay vs. Effect of Delay

Another philosophical dichotomy that complicates the evaluation of concurrency is the difference between the proximate cause of the delay and effect of the delay.

For example a schedule activity with a planned duration of five days experiences work suspensions on the second day and the fifth day, thereby extending the duration by two days. The delay-cause is on the second and the fifth day, but the delay-effect is on the sixth and the seventh day. The differences become much larger on activities with longer planned duration that experiences extended delays. A good example would be delayed approval of a submittal that stretches for weeks and months.

The philosophical difference rests on the observation by the delay-effect adherents that there is no 'delay' until the planned duration has been exhausted. In contrast the delay-cause adherents maintain that the identification of delay should be independent of planned or allowed duration, and instead should be driven by the nature of the event.

The disadvantage of the delay-cause theory is that if there are no discrete events that cause a scheduled activity to exceed its planned duration, it would have to fall back to the delay-effect method of identifying the delay.

Conversely, in cases where the delay was a result of a series of discrete events, the delay-effect method of chronological placement of delay would often be at odds with contemporaneous documentation of such discrete events.

The difference in outcome is pronounced under the literal theory, since it affects whether or not a delay is identified as concurrent. Under the functional theory the significance to the outcome depends on whether the analyst is using a static method or a dynamic method.

Using a static method, the cause-effect dichotomy makes no difference because the entire project is one networked continuum. But using a dynamic method, it does make a difference because the chronological difference between the cause and effect may determine the analysis interval in which the delay is analyzed.

At the individual activity level, there are logical bases for the application of both theories of thinking. But at the overall project level, the delay-effect theory makes very little sense because it simplifies the entire network into one summary bar and evaluates the net effect of various delay scenarios by comparing the length of the bars. In effect, it reduces concurrency analysis to a measuring exercise requiring only a ruler or an accurate eye.

The best practice that incorporates the best features of both theories is to use the cause theory where discrete delay events exist and to use the effect theory where there are no discrete events that led to the delay. But note that in many cases the identification of discrete causes is a function of diligence in factual research, which is in turn dictated by time and budget allowed for the analysis.

Frequency, Duration and Placement of Analysis Intervals

Analysis interval refers to the individual time periods used in analyzing the schedule under the various dynamic methods. The frequency, duration and the placement of the analysis intervals are the most significant technical factors that influence the determination of concurrency.

The significance of the analysis interval concept is also underscored by the fact that it creates the distinction in the taxonomy between the static versus the dynamic methods. The static method has just one analysis interval, namely the entire project, whereas the dynamic model segments the project into multiple analysis intervals.

Frequency & Duration

The variables of frequency and duration are related to each other and are dependent on the overall duration of the project. A thousand-day project can be segmented into ten equal analysis intervals of a hundred days each; and a seven-day project can be segmented into two analysis intervals consisting of two days and five days. While prevailing conventional wisdom states that the accuracy of the analysis is enhanced by increasing the frequency of analysis intervals, the number of intervals must be considered in relation to the duration of each of the intervals.

The caveat is applicable in evaluating any dynamic method, but would also apply when evaluating static methods. For example, a periodic implementation of the static observational method that evaluated the as-built in relation to the as-planned in daily increments may be a much better analysis than an implementation of the dynamic observational method using reconstructed updates where there are only three 'windows', each containing several months.

Concurrency is evaluated discretely for each analysis interval. That is, at the end of each period, accounting of concurrency is closed, and a new one opened for the next period. This is especially significant when analysis proceeds under the functional theory of concurrency in cases where two functionally concurrent delay events, one owner-delay and the other a contractor-delay, are separated into separate periods.

If those delay events were contained in one period, they would be accounted together and offset each other. When they are separated, they would each become compensable to the owner and the contractor respectively, thereby, in essence, forcing the functional theory to behave like a literal theory.

However, the distinction between the functional and the literal theories do not disappear automatically with the use of multiple analysis intervals. Two delay events separated by time within one analysis interval will still be treated differently depending on which theory is used. The distinction becomes virtually irrelevant only when the duration of the analysis interval is reduced to one day.

When multiple analysis intervals are used an additional dimension is added to the canceling effect that was discussed in the comparison of the literal theory to the functional theory. As stated above, the separation of two potential concurrent delay events into different analysis intervals causes the functional theory to behave like the literal theory.

Because the change from one period to another closes analysis for that period and mandates the identification and quantification of excusable, compensable and non-excusable delays for that period, it is only after all the analysis intervals, covering the entire duration of the project, are evaluated that reliable

results can be obtained by performing a ‘grand total’ calculation. In other words, the ultimate conclusion cannot be reached by selective evaluation of some, but not all, analysis intervals.

Chronological Placement

The general rule that all the intervals must be evaluated will assure the reliability of the net result. But the analyst can still influence the characterization of the delays by determining the chronological placement of the boundaries of the intervals, or the cut-off dates.

There are two main ways that the analysis intervals are placed. The first method is to adopt the update periods used during the project by using the data dates of the updates, which are usually monthly or some other regular periods dictated by reporting or payment requirement.

The other is the event-based method in which the cut-off dates are determined by key project events such as the attainment of a project milestone, occurrence of a major delay event, change in the project critical path based on progress (or lack thereof), or a major revision of the schedule. Event-based cut-off dates may not necessarily coincide with any update period.

The most distinguishing feature of the event-based placement of cut-off dates is that there is significant judgment exercised by the forensic analyst. Because the cut-off date is equivalent to the data date used for CPM calculation, it heavily influences the determination of criticality and float, and hence the identification and quantification of concurrent delays. Also, as stated above, the placement of cut-off date plays a major role in how the canceling effect operates.

Order of Insertion or Extraction in Stepped Implementation

In a stepped insertion or extraction (3.8) implementation, the order of the insertion or extraction of the delay will affect the identity of potentially concurrent delays and the quantification of such concurrency.

As a general rule, for additive modeling methods where results are obtained by the forward pass calculation, the order of insertion should be from the earliest in time to the latest in time. For subtractive modeling methods the order is reversed so that the stepped extraction starts with the latest delay event and proceeds in reverse chronological order. There are other systems, such as inserting delays in the order that the change orders were processed, or extracting delays grouped by subcontractors responsible for the delays. In all these seemingly logical schemes if chronological order of the delay events is ignored, the resulting float calculation for each step may not yield the data necessary for reliable determination of concurrent delays.

Communicating

To move ahead, you must be able to communicate effectively with bosses, peers, subordinates, and customers. That means not only expressing yourself clearly, but tailoring your message to the needs, concerns, temperament, and even the vocabulary of your listeners.

One-on-one communications call for somewhat different strategies and skills than presentations or speeches. But if you start with the individual, you will find it is easier to translate your skills to group communication situations.

Try for Rapport

Before you can communicate anything effectively to another person, you need a sense of rapport, says Genie Z. Laborde in *Influencing with Integrity*.

Rapport, the business of building a sense of faith or trust in the other party, is the most important part of any interaction. You build rapport by finding common ground with the other person. You can also develop it subtly by matching the other person's voice or tempo, breathing rate, movements or gestures, or body postures.

What's Your Goal?

Before trying to communicate, you must determine what you are trying to accomplish. To identify and achieve your desired outcome, Laborde suggests the following approach:

1. Aim for a specific result. Pinpoint exactly what you want the other party to comprehend.
2. Be positive. Communicate enthusiasm to the listener
3. See, hear, and feel sensory data. Listen to the type of words others use and tailor your images accordingly. Some people relate to visual images such as "I hope to see my name in lights." Others are more auditory: "I loved it when the crowd started to cheer." Another possibility is touching or feeling sensations: "It was like walking on air."
4. Dovetail your desires with the listener's. View the other person as an ally, and try to achieve something for both of you.
5. Entertain short- and long-range objectives, communicating in a way that will help you to reach both.

What Is a Good Communicator?

The essence of communication is people talking with people, observe Richard S. Ruch and Ronald Goodman in *Image at the Top*. Good communicators have an attitude of caring instantly, and it is sensed instantly by others. They can project and practice ideal communications. They refuse to become isolated from constituencies and have the ability to stand up to interrogations by telling the truth.

Effective corporate communications have to be based on honesty, the authors say. Try following these simple rules:

- * **Tell it straight from the shoulder.** Plain talk, maybe salty and definitely colorful, make you and your communications real. Talk across to your audience, never down. Watch for hip-shooting and foot-in-mouth disease.
- * **Be human.** And admit it. No one, no business is perfect. If you foul up, tell your constituencies. No one expects you to be superman. If your company is forced to retrench, tell them why and how.
- * **Keep it simple.** Avoid jargon. Nothing is as potent as a polished, bare bones, well-presented idea.
- * **Look for the drama.** Dig it out. Mix it with your communications. Let excitement in your business come through. You may find it fun.
- * **Be a good listener.** Nose to the grindstone and ear to the ground. Get out and talk to your customers and employees.
- * **Package your message attractively.** An interesting bottom line can be dull in plain black and white.
- * **Keep it short.** Sift through it all and only present the nuggets of gold. Keep your eyes on what's important to the audience, not what's important to YOU.
- * **Avoid legalese.** Don't sell out to the lawyers.
- * **Saying won't make it so.** Trust in advertising will sell a lot more than high-pitched hyperbole.

Get Feedback

Fred Pryor, author of *The Energetic Manager*, would add a rule to this list:

Get feedback. After you have talked with a person, make certain he or she understands what you are saying. This calls for getting feedback. "I want to know what you think about all this" is a way to seek such feedback. Then, if it is evident that persons do not understand what you are saying, you must clarify and refine your message.

This is time-consuming, of course. But not half as time-consuming as dealing with the problems that result from a lack of clear communications.

Verbal Persuasion

The authors of *Back-to-Basics Management* emphasize that before you can persuade, you must motivate the other person or persons to listen. To do that, respond to emotions with encouragement, reassurance, and praise. Encourage expression and tension release. You will have a more comfortable situation.

When Things Go Wrong

Things do go wrong, and when they do, managers indicate how skilled they are in managing, says Pryor.

Here are a few pointers for communicating when problems arise:

- Attack issues, not people;
- Ask for input and insight to solve problems;
- Avoid using labels such as "slow" or "incompetent."
- Give feedback that is pointed and specific. A report given you is not "lousy." Instead, it may require further development in the section on possible solutions.

If you are meeting over a problem, use this four-step method of changing grips to goals, using it to ask for help rather than attacking others:

- a. My frustration is*
- b. Why I would like is*
- c. Therefore, my goal is*
- d. So the meeting subject is*

Reading Body Language

Realize that your body language mirrors your verbal language. Don't just read body language and interpret symbols at the unconscious level. Assign meanings at a conscious level, too. Work to understand the silent language of body gestures, eye motions, skin/touch sensations, and space (standing or sitting far apart). Many gestures have more than one meaning. You must consider where it is done, who is present, and what preceded and followed the action. Remember that body language reflects feelings, not facts.

Here are some common body language signs and their possible meanings:

- Crossing arms or legs indicates defense;
- Lack of movement indicates that a person is trying not to be noticed, or is listening and planning, or is playing it safe;
- Leaning forward vs. sitting back is the difference between "tell me more, I'm interested" and "let me think about it; I may not be that interested."
- Cocking the head signals interest and a willingness to hear the opinions of others;
- Hands folded in the lap or on the stomach is a protective gesture; and
- Hands placed on a desk says, "Let's get right down to business."

You Are on Stage

No matter how good your skills and virtues are, they will not advance your career unless others are aware of them. You can't depend on your accomplishments to sell you.

You must learn to sell yourself

It is not as bad as it sounds. Selling yourself is simply a combination of trying to make a good impression on others and looking for and making the most of opportunities to let others know about what you have done and what you can do.

As Raymond C. Johnson puts it in *The Achievers*, you have to get your foot in the right doors and make a favourable impression on those who can help you toward success. And you can't get ahead if you do not feel confident and secure in your appearance and ability to express yourself.

Play the Role

You are on stage when you are at work.

An actor projects a constant image of ability and confidence. If you want to be recognized as an outstanding manager or department head, be prepared to play the role at all times and back it up with extensive homework. Those you work with and for are your audience.

Acting, in this sense, includes looking the role you have chosen to play. Fine quality clothing and careful grooming are important to making your mark as an achiever. When you think you can't afford expensive clothing, buy them anyway. Often your dress is the first impression formed of you. Dress for your way of life and invest in your future.

Look the Part

When you are on that work stage, carry yourself like a supremely confident actor making an opening night entrance to thunderous applause. And stay in the character you have written for yourself. The next step is a personal public relations program that allows others - friends, colleagues, neighbours - to sing your praises. People love to talk about important friends. Your success builds their importance.

Be subtle. Look for the right occasions to brag a bit, then give a copy of a newspaper clipping or other explanation of your achievement to others. They will pass the word along.

Help Others

Other suggestions in *The Achievers* for becoming favorably known include:

- Help others to attain their goals. Sooner or later, they'll send opportunities your way;
- Analyze your habits and make a conscious effort to build on the good and eliminate the bad;
- Be enthusiastic. No quality attracts people more;
- Act enthusiastic. Most of the power of enthusiasm comes from its effect on others;
- Cultivate empathy. Try to put yourself in other people's shoes;
- Make friends. No one gets ahead alone; and
- Ask for help. You gain the benefit of others' experience and expertise and most people like to be asked.

Planned Self-marketing

In *Blow Your Own Horn*, Jeffrey R. Davidson notes that self-marketing does not mean using people or employing deceit or trickery. It is not being boastful, arrogant, pushy, or egotistical.

The most effective self-marketing is done with class and honesty, based on a genuine respect and concern for the needs of others. The secret is to develop the skills that will make you a valuable professional and then to learn to promote those skills in a way that will earn you the respect and success you deserve.

Start by developing a plan. Define what you have to offer or want to offer the world. Draw up a career list of the things you want and don't want in your career. Focus on a few challenging, realistic goals. List the components of your ideal career or work situation, and consider these very specific goals. Finally, establish timetables for achieving those goals.

Become Indispensable

An effective marketer creates a niche for the product or service being promoted. To advance your career, you must create a niche for yourself. That means making yourself indispensable - the person supervisors ask for first when reorganizations begin, the office expert in certain subjects, the mentor to many junior employees. You can do this by finding out what is needed on the job, not just what is expected.

There are many ways to make yourself indispensable. Here are nine of them:

1. **Take the unwanted job.** Pick up a skill or technology that is vital to your company, but relatively hard to learn. Or be the best at something no one else wants to do.
2. **Go the extra mile.** Take on more work than you are assigned. Volunteer to help on a project that is running over deadline. Help out on rush jobs. Help a fellow worker who is having problems.
3. **Work harder when unsupervised.** You know how it is. The boss goes on vacation and production drops. Employees drift into each other's offices, stretch lunch hours, and make more personal phone calls. Do the opposite. Work extra hard. Try to complete jobs assigned to you before the boss left. There is nothing a supervisor appreciates more after a trip than "Here is the job you wanted. It is done." The subtle yet deep-seated message you convey is long-lasting.
4. **Get credit for the group.** Those who make it to the top levels of management are able to motivate others to do their best and to work well together. Those above you know that when a group does well, it is at least partly because someone exhibited leadership. If you were managing the group, you have proven your ability to facilitate good work.
5. **Make your boss look good.** Both bosses and their supervisors appreciate this. The best way to make your boss look good is to handle your work efficiently and thoroughly. A fair boss will give you credit for this, increasing your chances of promotion. If your boss leans on you heavily without giving you credit, you will still probably win the promotion. That boss understands your importance to him and will not want to take a new position without your assistance.
6. **Handle key client development.** Each time you interact with a client, you are planting the seeds of a personal and professional relationship. If you have done your job well, that relationship becomes one of the company's most important assets.
7. **Become a mentor.** No matter how young you are, you may be in a position to help junior members of your firm. This can be accomplished on an informal basis, and you can choose the amount of energy you are willing to commit. Helping junior members looks good to those above you, especially at performance review time.
8. **Be aware of a supervisor's needs.** If your boss has been extra supportive of you, tell him or her that you appreciate it. Remember to praise your boss to your co-workers and other supervisors. Be sure to be honest. A phony attempt can be detected immediately.
9. **Know what's needed.** This means knowing the basics - being on top of your job, your department's goals, and your company's objectives. This strategy calls for specific actions.

Protect Yourself

Knowing your job description and following it, or getting it amended if necessary, will protect you from misunderstandings and give you a good idea of the part you play in the organization. This is important to both your work satisfaction and your chance of promotion.

Be sure to learn and understand the goals of your department. They are important to guide action as well as to mark milestones. Knowing your group's goals will help you to set priorities for your own work and to make intelligent decisions about how jobs should be done.

Be aware of your company's objectives. They may be to expand sales, increase mergers, or solidify a market. Your organization's brochure, annual report, promotional literature, or employee handbook should have the objectives spelled out. It should unify and give meaning to all the department goals. Be aware that the objectives can change with differing economic and market conditions.

If you are not receiving sufficient guidance, look at any problem in light of your company's objectives.

Keys to Promotion

You can anticipate organizational changes and carve your own niche in any new structure. Do this by being on the lookout for needs you can fill in any new organizational chart, and be qualified to fill that need. That often means becoming an expert and that a new job, and a new title, will be created for you, so that you can carry out that aspect of the company's functions.

If you have already developed such expertise, make your superiors aware of your special knowledge and how much people depend on you to provide that knowledge.

Another way to increase your chances of promotion is to turn that annual performance review into an opportunity for better things. To do this, keep track of your performance for a year. Review your appointment book, your list of goals, and other materials. Then compare how you have done with what you set out to do. Armed with this, you can take more control of the performance review sessions.

Spread the Word

Create opportunities for more people to know you and your accomplishments.

Join local professional and community organizations and attend their meetings. Try to attend at least two major professional conventions a year. Become an active member of your groups. Choose organizations that genuinely interest you and be active on committees and task forces.

Prepare to do some public speaking. Develop a few topics to speak on, look for organizations that might be interested, and send them letters explaining your background and the topics about which you can speak.

Have your articles published. This establishes your credentials as an expert and gets favourable exposure for you and your company. Start with in-house publications, then try for professional and general newsletters or magazines. Submit suggestions before you write an article, focusing on successful work you have done. "How-to" formats are always popular.

Prepare reprints of your articles and circulate them to friends and associates.



WORK SIMPLIFICATION

Work simplification can be described as the intelligent use of well-established human patterns to encourage and expedite the finding and implementation of more efficient work methods. Over the years the work simplification approach rooted in bio-mechanics has earned a rapidly expanding popularity.

Many industrial companies have sponsored formal work-simplification programs. Most of these have been quite successful in delivering a multitude of cost-reducing and profit-increasing innovations.

Originally, work-simplification was conceived as an application concentrated in the area of production methods. Experience has expanded its applicability. Work-simplification concepts are now utilized to improve performance in many other activities, including clerical functions, supervisory techniques, research, and maintenance.

In fact, the term work-simplification has become almost a synonym for an organized grass-roots methods improvement technique.

The traditional approach to methods improvement has been to employ highly trained specialist in industrial engineering techniques to spend full time on this activity. These experts are assigned the task of studying one activity after another throughout the entire organization.

They are expected to locate opportunities for improved performance, develop ways for these improvements to be achieved, evaluate their feasibility, sell their acceptance, and assist in their implementation. A great deal of progress has been achieved in this manner. Nevertheless, it has been found that the effectiveness of this traditional approach may become diluted in two ways:

- Much time and effort is expended by the expert to become familiar with each new activity studied in order to ascertain that all pertinent aspects and interactions with related activities are uncovered and properly evaluated; and
- Improvements developed by the experts are usually resented by prospective users, mainly due to typical reaction to outsiders usually found among company employees.

The work-simplification approach is designed to minimize these difficulties. Each employee is assisted to become his own expert and is encouraged to study and recommend way to improve the performance of his own job motivation is develop by demonstrating the value to both workers and management of the results they can achieve by working together as a team.

Training in the use of a collection of simple but ingenious techniques provides each employee with adequate know-how to make the required methods-improvement studies.

Work-simplification is more productive when there is widespread participation by many individuals from all levels in the company in an organized program.

Carefully planned indoctrination sessions must be provided to develop effective motivation. All participants should receive training in basic methods-improvement tools and techniques.

A means of handling ideas, such as a suggestion system, should be developed to make a method of communication readily available, to provide a way for obtaining prompt management review of improvement proposals, to facilitate recognition for contributions and to provide adequate rewards for achievements.

THE LAW OF INTELLIGENT ACTION

William J. Reilly, in his book entitled the law of intelligent action, states that "When confronted with a problem, the intelligence of an individual's actions is dependent upon his/her:

- Desire to solve the problem;
- Ability to perform the tasks required; and
- Capacity to handle the human relations involved."

DESIRE

Motivations for the actions of human beings can be divided into two basic categories:

- To gain (What is in it for me?); and
- To avoid loss (That is mine. Hands off).

Thus the employee seeks employment as a means of gaining:

- Security or reasonable control over his own future;
- Material reward or money to buy things;
- Opportunity to improve his position in an economic or social way; and
- A sense of participation (belonging to the group and having a say in the activities of the group).

It can be expected that the attitude of the individual toward an opportunity for personal gain will be almost entirely selfish. His controlling interest will be "What is in it for me?" but his decisions and actions will tend to be rational, logical, and based on facts.

A direct appeal toward actions which will result in benefit to him and others can be expected to receive objective analysis.

However, the attitude of the individual toward the possible loss of something he already possesses can be expected to be entirely different. Decisions will tend to be based on emotion rather than facts.

Actions taken in connection with a possibility of losing existing possessions may often be devious and will sometimes appear completely illogical.

This difference in attitudes is of great significance when the acceptance of methods improvement is being sought.

To an individual not directly involved, the introduction of a cost-saving proposal involving the use of a new piece of equipment or a new method can have the appeal of intelligent selfishness, but to a person directly involved, a change from the existing implies the loss of his own know-how applicable to the old procedure or equipment.

The fear generated by the prospect of such a loss can be completely cancel out any appeal of mutual benefit. Therefore, to be successful a work-simplification program must have identified with it specific management policies and practices which will assure the individual that he can gain and will not personally lose as the result of implementation of the proposals.

A suggestion system can provide recognition and financial rewards, but an additional guarantee by management indicating that participants will not suffer personal loss through downgrading or layoff is essential.

An agreement to achieve force reductions via attrition or transfer of displaced individuals to other expanding activities is often a mutually acceptable approach. With careful planning, this method is usually adequate to absorb force reductions made possible by work-simplification proposals. Reductions via layoffs can eliminate any possibility of a successful program.

After all, the cooperation of the individual just cannot be expected if he can see that this cooperation will result in direct losses to himself, his friends, or his associates.

ABILITY

Until the introduction of participating work-simplification programs, which provided both the receptive climate and the necessary training of the participants, the idea that the average employee could successfully conceive, develop and implement worthwhile methods improvements was only a hypothesis.

Management possessed little evidence and even less faith that such efforts were likely to be really productive of meaningful results. Today, however, the impressive results of many successful industrial work-simplification programs amply document the validity of this hypothesis.

It has been unquestionably proved that the latent ability to develop methods improvements exists in the majority of individuals and can be effectively utilized if proper motivation and training are provided.

It has been shown that with only minimal training in a few of the simple basic industrial engineering tools the average individual can develop an amazing ability to recognize opportunities for improvement and to implement workable solutions.

HUMAN CAPACITY TO CHANGE

The basic pattern of human nature has been fairly well established and demonstrated to be essentially unchangeable. Human behavior, however, can be modified and to a certain extent controlled. In fact, human behaviour, is relatively predictable and can be measurably influenced by anyone with a thorough understanding of the basic mechanics of human nature plus a willingness to take the prerequisite actions.

In respect to influencing attitudes toward prospective methods-improvement installations, it is usually sufficient to learn to recognize and deal with two of the most basic traits of human nature:

- Resistance to change or to accept something new; and
- Resentment of criticism.

The user can see nothing in a change for him and an excellent chance of insecurity. Naturally, he resists change. It is almost a conditioned reflex. Everyone tends to be critical or, and resistant to change.

A successful work-simplification program must make provision to assist participants to become familiar with this universal reaction and to learn how to minimize its hampering effect.

Participants must:

1. Learn to avoid confusing fact and opinion. Practice results in habits and can lead to the development of biased opinions that cannot be properly extrapolated. Experience increases knowledge of facts which provide a sounder basis for extrapolation.
2. Learn how to avoid misunderstandings represented as failure to ascertain all the facts which provides a sounder basis for extrapolation.
3. Learn how to avoid rush judgment. Time is required for mature judgment. Lack of experience must be taken into consideration in making evaluations.

A change for the better implies criticism of the old method and what is even worse, criticism of the user of the old method. Direct or implied, constructive or destructive, the immediate reaction is fast and always the same. No one likes criticism. It is always taken as a personal affront. It is resented.

To develop a successful work-simplification program, participants must learn to expect this reaction in others and in themselves. They must learn to minimize offending others, to keep criticism from improperly affecting their own judgment and to help others keep it from confusing their decisions.

Methods for solving problems

A problem occurs when people believe they want to know the exact relationship between two or more measurable facts. For example, if a person wants to make an increased profit by reducing the costs of materials used in a work process, there is a problem.

What would happen to profits if plastic instead of steel parts were used in a machine? What would happen to quality and safety? Plastic, steel, profit and safety can be measured in exact ways. Therefore, a person can test the specific relationship between these facts to obtain an answer. A result of using the answer would be increased profits and productivity.

All problem-solving techniques have ways of identifying the exact problem, getting facts, testing for results, reaching conclusions and verifying what you believe to be true. Several methods exist for modern problem solving, each has its advantage.

The scientific method

This how all research in science and industry, medicine and business takes place. A hypothesis (statement of relationship between measurable facts) is formed and test facts gathered. A conclusion is reached based on math (probability theory) patterns and later verified with additional or varied testing.

According to A. D. Little there are four facets to be considered by the scientific approach:

- The simplicity to wonder;
- The ability to question;
- The power to generalize; and
- The capacity to apply.

The work simplification approach applies each of these in a very literal fashion.

Maintaining an open mind.-(The simplicity to wonder)

The participant with an open mind wonders about everything. He is willing to explore all alternatives. He is not restricted by past practice, precedent, tradition, habits, customs, or fear of the consequences of change.

Observing the present way.-(The ability to question)

Few people know how to do an adequate job of questioning. Most of them stop asking too soon. Sometimes this is merely to avoid embarrassing the person questioned. To succeed in work simplification, one must get use to question everything. Work simplification provides an organized plan for questioning. It is called the questioning pattern and it is a definite sequence of question:

- What is done?
- Where is it done?
- When is it done?
- Who does it?
- How is it done?
- Why is it done at all?
- Why is it done here?
- Why is it done then?
- Why does this person do it?
- Why is it done this way?

This is a training pattern which is to be followed literally at first but which soon becomes simply an organized way of thinking.

Exploring opportunities for improvement.- (the power to generalize)

From the answers, tentative conclusions (generalizations) can be developed. Possibilities for improvement are then investigated:

What?, Where?, When?, Who?, How?, Why eliminate?, Why change place?, Why change sequence?, Why combine?, Why change a person?, Why improve method?

It should be remembered that the person is searching for possible solutions. If it has never been done before, it may be a better way.

Do not admit it cannot be done or you are defeated before you start. Try to find ways to make new ideas work, not to prove them unworkable.

Implementing the new method.-(The capacity to apply)

It is not enough to wonder, ask why and develop a workable improvement. An idea has no value until it is put to use. The capacity to apply implies two things:

- The ability to see the application of a general rule to a specific problem; and
- The ability to convert an understanding of human nature into an approach to the new method which will gain the cooperation of the people involved.

The statistical method

Observational facts are gathered until a recognizable pattern is identified. Comparisons are then made to the experiences we usually expect under normal or average conditions.

The correlation method

Using records of events that happened in the past, relationships between what you are investigating and what you are measuring can be identified mathematically.

The British method

After describing the problem and getting facts, the person or group describes their present and future position. A plan of action is then organized, followed and adjusted periodically.

The Japanese method

This method calls for describing the problem and asking the staff for volunteers. Young, inexperienced people usually volunteer. It emphasizes improvement of the situation at a slow but firm pace along with company culture and work satisfaction improvement.

The Ordione method

This method stresses time. Its basic idea is that, if things do not change, results remain the same. Therefore, if your work results change you have a problem. One or more factors must have changed at the same time. Find out what changed in the same time frame and that should correct the deficiency.

The brainstorm method

This method uses a group to identify several answers rapidly. First you select a group of five to seven people, some with experience with the problem area. Some are warned in advance about the job and others are not. A short time limit is set.

One person records the answers group members rapidly fire; objections or explanations are not allowed at first. What you wind up with is a variety of answers, some better than others.

One offshoot method is called the Delphi method, in which members of the group are hidden from each other. The idea is that some members with a great deal of power or prestige can influence other's ideas excessively, so this method prevents such influence.

Deductive reasoning

After gathering specific facts or clues, the solver uses them to reach a general conclusion. For example, a person might say, 'Because the wind is blowing, the clouds are darkening and the lightning is flashing.... I believe the rain will come down in the next thirty minutes.

Inductive reasoning

In this method, a person starts with a general conclusion and then looks for supporting facts or clues. In law enforcement, an officer might hear a confession and later search for clues or evidence that the crime actually happened in that manner. In business, if a bankruptcy happens, auditors may search for exact problem areas they know may exist.

Judicial Thinking

To solve problems or reach decisions with this method, a businessperson might assign someone to present all the facts possible to support a 'yes' decision to buy a mainframe computer. Another person should then present all the 'no' facts about the possible purchase. The company executive team would then judge where its best interests lie.

New Thinking Techniques

This method suggests that people often think only in straight-line fashion, using normal logic. This can be symbolized by a person thinking one-two-three-four-five-six and so on.

New thinking techniques suggest entirely changing the framework of reference of the problem situation to achieve results in different ways. This kind of thinking could be symbolized by a person thinking one-two-three-four-a-b-c-five-six and so on. An example of this kind of problem solving technique would be the following:

An office building six stories high with old/slow elevators causes tenant complains. Renters are threatening to move out. Lack of profits would be catastrophic for the owners. Engineers are hired to devise a solution. No luck. Repairs to the elevators would be too expensive because they are built into the inner office structure (the engineers are thinking along logical or usual lines).

The problem is solved by an employee in the boiler room who used absolutely different thinking. He purchased six full-length mirrors from a department store. He installed them, one at each of the elevator doors on six floors. People were so busy looking at themselves, they did not notice or complain about the slow elevators afterward.

The Kissinger method

This method depends on language. The exact problem is re-described in various ways. Questions by an outside expert are used to encourage two or more arguing parties to define what they can and cannot accept in the way of a settlement or answer. This method is based on the fact that language is vague, and people usually do not get angry if they are asked questions that concentrate on facts instead of repeated emotional statements.

Hard work method

In this procedure, you assume hard work will accomplish any task. Past generations were often trained to work hard regardless of any situation. So this method is still popular with supervisors, regardless of results.

Lazy man method

Should you have a problem, just hire an expert to solve it. Why try to invent the chicken when you live next to a farmer with a front yard full of the birds? Consultants or experts are very cost-effective when properly introduced.

The subconscious method

With this method, you define your problem and get all the facts you can. Decide which characteristics the solution must have. Relax your mind and body in a quiet, interruption-free place. As your mind moves from relaxation to sleep, it enters the Alpha condition which registers ten megacycles per second on an electronic measuring device.

The average person can better identify the Alpha stage by merely noting that he is fully relaxed and is moving toward sleep. Curiosity disappears, too.

During this stage, people seem to access most of their memory and make creative associations that help find solutions to difficult problems. The answer often comes all at once, not in pieces, so be prepared to write it down quickly! Bio-feedback training can help you train yourself to get into and out of this Alpha condition with ease whenever you wish.

Problem solving general facts

A problem exists when you want to establish the relationship between two or more measurable facts.

- All problems have answers. There are no exceptions!
- Problems usually have several answers, not just one;
- No one solves a problem without first defining it exactly;
- Logic is not enough. Since we never have all the facts, we must depend on creative intuition to some degree. Therefore, logic and intuition are equally valid;
- All elements of the problem situation must be measurable;
- Everything is measurable. There are no exceptions;
- Finding the answer is not the last step, merely the last point before taking action;
- It is human to seek solutions even before the problem is understood. But do not do it yourself; and
- Let your purpose guide your choice of alternatives.

Five Steps of Methods Improvement

A definite and permanent advance is seldom made until use is made of measurement. This is particularly true where human factors are involved.

Human performance tends to vary so much that unless some form of measurement is provided and used as a basis for decisions, there is little possibility of repeating a process accurately or predicting or controlling future conditions sufficiently to allow introduction of improvements.

Mere observations done objectively, is a form of measurement. It can be used to classify, label, and compare. An interesting demonstration is to pick a task with which you are familiar but not directly involved.

Now, subject the performance of this task to your concentrated and undivided attention. Chances are that you will find that you were completely unaware of many important aspects. It can be truthfully said that the commonest article of commerce is misinformation about fundamental things.

An organized pattern of observation is of great assistance. Work simplification suggests a step-by-step program for studying tasks:

1.- Select the task to be studied.

Be careful that only one task is studied at the time. Failure to observe this caution can lead to confusing results or to ineffective efforts.

Because time is valuable, the best possible use of it must be made by doing first things first. Pick the job that needs improvement most. But remember the human problem. do not rush in too fast. Start by improving your own job or jobs in your department.

Remember, if you work on someone else's problems, they will probably resent your help as implied criticism.

Look for situations as:

a. Bottlenecks.

Leave the smooth-flowing jobs alone until you crack troublesome ones.

b. Time-consuming operations.

Lengthy jobs usually offer the greatest opportunity for improvement.

c. Chasing around.

Activities of this type are almost always unproductive and often can be eliminated or drastically reduced.

d. Waste.

We become so accustomed to some forms of wasted materials, time, or energy that we have difficulty in recognizing it as such. Increases go unnoticed. Look carefully.

2.- Observe the present way in which the task is performed.

Get all the facts. Be sure to include all the requirements for the performance of the task. Do not forget to determine interactions with related tasks. Make a process chart and use it to record all details.

3.- Challenge everything. Question what is done.

a. Challenge the whole job being investigated. Why is it done? Is it necessary? Can it be done another way or at another time or place?

b. Next, challenge each 'do' operation. This is because if you eliminate the 'do' you automatically eliminate the make-ready and put-away that go with it.

c. Then supply the checklist of questions to every detail.

WHAT?

What is done? What is the purpose of doing it? Why should it be done? Does it do what it is supposed to do?

WHERE?

Where is the detail being done? Why should it be done there? Could it be done somewhere else?

WHEN?

When is the detail done? Why is it done then? Could it be done at some other time?

WHO?

Who does the detail? Why does this person do the detail? Could someone else do it?

HOW?

How is the detail performed? Why is it done that way? Is there any other way to do it?

This questioning attitude helps develop a point of view that considers the good of the whole operation rather than that of any one department or individual. It will often bring to light possibilities for eliminating useless or unnecessary work which adds no real value to product.

It tends to bring out the type of operation or equipment needed to perform the required work most economically. Do not overlook the possibility of obtaining ideas from other people working on the same operation. And do not forget that when you ask for these ideas you have a human problem.

You will get the ideas only if they want to give them to you. they must be convinced that improving performance will help them.

4.- Explore opportunities for improvement.

Consider all possibilities. Examine each in detail. Evaluate, compare, and select the best alternative. Use the flow process chart or multiple-activity chart to pretest and demonstrate the feasibility of new methods.

a. Can operations be eliminated?

What is done?, Why is it done?, Is it necessary?. In far too many instances a good deal of time is spent studying major operations for possibilities of improvement without asking the question, 'Why is this operation performed?'

If it is found that an operation has been in the plant in the same way for a year or longer, it should be questioned. A better way is probably available. If operations cannot be eliminated, perhaps there are unnecessary transportation and storage. Question every handling.

Then, if handling is absolutely necessary, look for:

- Back-tracking of work;
- Heavy lifting or carrying;
- Trucking;
- Bottlenecks; and
- Skilled operators doing handling work.

b. Can activities be combined? Can sequence, place, or person be changed?

This is an important opportunity for improvements. Whenever two or more operations can be combined, they are often performed at a cost approaching or even equal to the cost of one.

Likewise, transportation and storage between the operations may be eliminated. If operations cannot be combined, find out if it is possible to combine a transportation and an operation. By changing the sequence of an operation, one may eliminate backtracking and duplication of work.

The order in which operations are performed may have been derived from the original nature of the process. The process or product design may have been changed since then. But has the order of operations been restudied and changed to regain optimum efficiency?

Sometimes, just changing the place where the work is done or by whom it is done will help. Better lighting, better ventilation, better tools may be available elsewhere. Perhaps another operator is better equipped to do the operation.

c. Can the 'do' operation be improved?

How is it done?, Why is it done that way?, Is better equipment available?, Are other materials available?, Can new techniques be applied?.

Unfortunately, it is here that a great deal of work simplification started in the past. We must learn to consider this step the last resort. Major savings can usually be found, but the price of the new equipment, materials, training, etc., is also usually high, sometimes beyond our reach.

Often relatively small rearrangements, method changes, and layout revisions will accomplish almost as much with negligible cost.

5.- Implement the new method.

See that all people involved understand the objective of the task and desirability of the new method. Take care that each person involved knows and understands his or her part in the new method. Be sure that none involved will lose financially or socially as a result of the change. And, even more important, be sure that they know it!

Charting Techniques

There are many charting techniques which have been designed to assist in the development of improved methods. They are:

- ◆ Flow process chart;
- ◆ Multiple-activity process chart;
- ◆ Pareto;
- ◆ What if?
- ◆ Gantt chart;
- ◆ Critical path network; and
- ◆ PERT.

All these charting techniques are similar in principle. They are a means of recording and studying activities required to perform a task. The above list is in order of increasing complexity.

The flow process chart is used to record a single sequence of activities. The multiple activity chart is used when several sequences of activities occur at the same time and their relationship with respect to time are significant.

The Gantt chart is utilized when the number of simultaneously occurring sequences of activities becomes large. The use of the critical path method network is desirable when some of the sequences of activities are time-related and some are not. This approach can become quite complicated and then computer programs must be used in conjunction with it.

PERT (program evaluation and review technique) is a variation of the critical path technique into which another variable, probability, has been introduced.

Applications of Work Simplification to Quality

Quality control work is different from production work in two basic ways:

1. Most quality control work input is assigned and controlled on a job-by-job basis rather than unit-of-time or product-output. For this reason, work content is usually non-repetitive in nature.
2. Direct correlation between work output and product or service output is seldom feasible. This tends to make verification of savings difficult.

These differences do not limit the usefulness of the work- simplification approach. But they do change the emphasis somewhat.

Improving Management Efficiency

The problems encountered in applying intelligent management to quality control are very complex. Effective management usually requires a great deal of data. A huge volume of records are often generated. Work simplification can give a big assist to the streamlining of these activities. For instance:

1. Work-control procedures.

Efficient assignment and control of work on a job-by-job basis requires much planning and a large volume of paper work. This work is very repetitive in nature and an excellent subject for work simplification.

On work of caution: simple elimination of paper work or arbitrary reduction in the number of work orders is not the answer if it results in loss of control. Much can be done, however, to reduce complexity of this documents and decrease the effort and time required to process them without destroying their effectiveness.

2. History records.

The development of maintenance history records is absolutely essential to carrying on a productive quality control program. But these records are often quite voluminous and time-consuming in both preparation and use. The methods used for the assembly and retrieval of information from these records represent an excellent area for work simplification.

Improving Technical Decisions

The following are areas of effort which can greatly benefit from the use of the work-simplification approach, specially when equipment grows more and more complex:

1. Pre-detection of incipient failures.

Effective preventive quality control will require improved techniques for predicting when, where and how failures are likely to be incurred. This probably involve the development of better inspection techniques, the introduction of the use of more diagnostic instruments, and perhaps the introduction of continuous monitoring techniques.

2. Post-failure remedial-action decisions.

The determination of the exact nature and extent of equipment malfunctions and remedial action indicated is becoming increasingly difficult as the variety and complexity of facilities increase. The advance of standard diagnostic routines offers excellent opportunities for development of better methods.

3. Repetitive-job standardization.

Use of standardized, pre-selected procedures for the same or similar jobs will increase the volume of work upon which detailed methods-improvement studies can be justified.

Improving manpower and machine utilization

The multiple-activity process charting technique provides an excellent vehicle for exploring ways to:

1. Reduce crew sizes.

This is accomplished by using pre-planned, shop make-ready, prefabrication or pre-assembly, special-handling equipment or tools, etc., can frequently reduce the amount of work done by field crews.

2. Reduce out-of-service time.

Careful pre-scheduling can often appreciably reduce the total time required to complete jobs. The multiple-activity process chart is a good tool for this purpose. When jobs are large and complicated, it is usually necessary to resort to the more complex critical-path technique.

London Court of International Arbitration (LCIA)

The LCIA arbitration rules are universally applicable. They offer a combination of the best features of the civil and common law systems, including in particular:

1. Maximum flexibility for parties and tribunals to agree on procedural matters
2. Speed and efficiency in the appointment of arbitrators, including expedited procedures
3. Means of reducing delays and counteracting delaying tactics
4. Tribunals' power to decide on their own jurisdiction
5. A range of interim and conservatory measures
6. Tribunals' power to order security for claims and for costs
7. Special powers for joinder of third parties
8. Fast-track option
9. Waiver of right of appeal
10. Costs computed without regard to the amounts in dispute
11. Staged deposits - parties are not required to pay for the whole arbitration in advance.

The parties

Many major international businesses, based in a large number of different jurisdictions, of both civil and common law traditions, entrust their disputes to the LCIA. Many cases are technically and legally complex and sums in issue can run into US\$ billions.

Seat of Arbitration

Although the LCIA is headquartered in London, the choice of seat, or legal place, is entirely up to the parties. Therefore, parties wishing to provide for a seat elsewhere than London should not be deterred from adopting the LCIA rules. Parties adopting, or adapting, the LCIA's recommended clauses will specify the seat in their contract, but, if they fail to do so, Article 16.1 of the LCIA rules provides for a London default seat. If, however, one or more of the parties wishes to argue for an alternative seat, the LCIA Court will decide the issue.

Types of contract in dispute

The subject matter of contracts in dispute is wide and varied, covering all aspects of international commerce, including telecommunications, insurance, oil and gas exploration, construction, shipping, aviation, pharmaceuticals, shareholder agreements, IT, finance and banking.

Costs of LCIA arbitration

The LCIA's charges, and the fees charged by the tribunals it appoints, are not based on the sums in issue. The LCIA is of the view that a very substantial monetary claim (and/or counterclaim) does not necessarily mean a technically or legally complex case and that arbitration costs should be based on time actually spent by administrator and arbitrators alike.

A non-refundable registration fee is payable on filing the Request for Arbitration. Thereafter, hourly rates are applied both by the LCIA and by its arbitrators, with part of the LCIA's charges calculated by reference to the tribunal's fees. The LCIA sets a range within which the arbitrators it appoints must (other than in exceptional cases) set their fees.

Interest on sums deposited by the parties is credited to the account of the party depositing them at the rate applicable to the amount of the deposit.

Parties may call for financial summaries at any time to keep track of costs. Every payment on account of arbitrators' fees will be notified in advance and accounted for on disbursement. It is the LCIA Court which, under the Rules, must, determine the costs of each arbitration, according to the following procedure.

The Secretariat provides the Court with a financial dossier, which includes a complete financial summary of sums lodged by the parties, sums paid to the arbitrators, outstanding fees and expenses and interest accrued. The dossier also includes a copy of the original confirmation to the parties of the arbitrator's fee rate, copies of the arbitrator's accounts, a copy of the LCIA's own time and disbursements ledger, copies of directions for deposits, and copies of all notices given to the parties of payments made from deposits.

The Court reviews the dossier and, if necessary, calls for any further information, or initiates any investigation it may require to satisfy itself that the costs are reasonable and are in accordance with the schedule of costs, before notifying the Secretariat of the amount to be notified to the Tribunal for inclusion in the award.

Any dispute regarding administrative charges or the fees and expenses of the tribunal are determined by the LCIA Court.

Tribunals

By Article 1.1(e) of the LCIA Rules, if the arbitration agreement calls for party nomination, the Claimant should nominate an arbitrator in the Request for Arbitration.

By Article 2.1(d), the Respondent should nominate an arbitrator in the Request for Arbitration.

By Article 2.3, failure by the Respondent to nominate within time (or at all) constitutes a waiver of the opportunity to nominate.

By Article 5.3, there is a presumption in favor of a sole arbitrator unless the parties have agreed in writing otherwise, or unless the LCIA Court decides that the circumstances of the case demand three.

By Article 5.5, the LCIA Court alone is empowered to appoint arbitrators, though always having due regard for any method or criteria for selection agreed by the parties.

By Article 6.1, nationality restrictions apply in the selection of a sole arbitrator or Chair.

By Article 7.1, any purported agreement that the parties themselves, or some third party, shall appoint an arbitrator is deemed an agreement for party nomination.

By Article 7.2, the LCIA Court may, itself, select an arbitrator, notwithstanding an agreement for party nomination, if any party fails to nominate, or nominates out of time.

By Article 8, multiple parties lose the right to nominate if they cannot agree that they represent two sides to the dispute for the purposes of the formation of the tribunal.

By Article 9, the LCIA Court may abridge the time for the appointment of the tribunal, in cases of "*exceptional urgency*" and may, thus, require a Respondent to nominate its arbitrators within a shorter period than the 30 days prescribed by Article 2.

By Article 11.1, the LCIA Court may refuse to appoint a party-nominated arbitrator if it determines that the nominee is not independent or impartial or is not "*suitable*".

Procedures

In all cases, whether or not the arbitrators are nominated by the parties, the basic LCIA procedure is as follows, save that steps 4 and 5 are omitted in the case of party nomination:

1. The LCIA Secretariat reviews the Request for Arbitration and accompanying contractual documents, and the Response (if any).
 2. A résumé of the case is prepared for the LCIA Court.
 3. Key criteria for the qualifications of the arbitrator(s) are established.
 4. The criteria are entered into the LCIA's database of arbitrators, from which an initial list is drawn.
 5. If necessary, other institutions are consulted for further recommendations.
 6. The résumé, the relevant documentation, and the names and CVs of the potential arbitrators are forwarded to the LCIA Court.
 7. The LCIA Court advises which arbitrator(s) the Secretariat should contact (who need not be, but usually will be, those put forward by the Secretariat) to ascertain their availability and willingness to accept appointment.
 8. The Secretariat sends the candidate(s) an outline of the dispute.
 9. When the candidate(s) confirm their availability, confirm their independence and impartiality, and agree to fee rates within the LCIA's bands, the form of appointment is drafted.
 10. The LCIA Court formally appoints the tribunal and the parties are notified.
- In addition to the basic procedures, above, the following features of common LCIA practice should be noted.

Given the Secretariat's considerable experience in selecting arbitrators, and personal knowledge of many candidates, there are some cases in which a suitable selection of candidate arbitrators may be put forward to the Court by the Secretariat, without the need to interrogate the database. (See step 4, above).

Whilst the LCIA is, of course, concerned that each arbitrator should be appropriately qualified as to experience, expertise, language and legal training, it is also mindful of any other criteria specified by the parties in their agreement and/or in the Request and Response.

The LCIA is also concerned to ensure the right balance of experience, qualifications and seniority on a three-member tribunal; in particular, what qualities the Chair should have to complement those of his co-arbitrators.

The LCIA is mindful also of any particular national and/or cultural characteristics of the parties to which it should be sensitive, so as to minimize conflict. Similarly, it addresses such issues as whether the arbitrator(s) should have a light touch or a firm touch, bearing in mind, for example, the degree of professionalism it expects of the parties given whom they have chosen to represent them.

Of course, the LCIA also considers the nature of the case (sum in issue, declaratory, technically complex, legally complex, etc); the identity and known characteristics of the parties' lawyers and, indeed, whether the parties are represented at all.

The LCIA is equally concerned to ensure that arbitrators are not only suitably qualified and without conflict, but are also available to deal with the case as expeditiously as may be required. This does not mean that an arbitrator must have an immediately clear diary, but some cases place greater demands on an arbitrator's time (in reviewing submissions, dealing with preliminary issues, in hearings etc) earlier in the proceedings than do others.

Finally, the LCIA is always amenable to a joint request by the parties that it provides a list of candidate arbitrators, from which they may endeavour to select the tribunal, whether in straightforward negotiation, or by adopting an United Nations Commission on International Trade Law (UNCITRAL)-style list procedure.

In such cases, the selection process described above is carried out in respect of all candidates to be included on the list, so that any candidate(s) selected by the parties have already confirmed their willingness and ability to accept appointment and have been approved for appointment by the LCIA Court.

Thus, the process of selecting arbitrators is by no means mechanical; it is a considered combination of science and art, as to which the LCIA, both in its Secretariat and in its Court is well qualified.

Dispute Resolution Board Concept (DRB)

Managers of successful construction projects resolve disputes fairly and efficiently. Some projects are blessed with participants possessing the right combination of leadership skills, technical ability, business acumen, and interpersonal skills to resolve disputes among themselves. Other projects are cursed with problems and disputes that are contentious and difficult to resolve.

Most projects lie between these two extremes. Owners embarking on a construction program need to develop a mechanism for resolving the range of disputes they might encounter during the execution of a project. One of the most effective tools is the Dispute Review Board (DRB).

Over the years the construction industry dealt with the resolution of claims and disputes through a variety of methods. One of the most successful and enduring is the DRB. A simple description of a DRB is that it is a board of impartial professionals formed at the beginning of the project to follow construction progress and available on short notice to resolve disputes for the duration of the project.

Records of the construction industry through the early part of the twentieth century contain little information on the frequency and seriousness of disputes and litigation. It appears that up until the 1940s, commonly used procedures – such as prompt, informal negotiation, or a ruling by the architect or engineer – were generally sufficient to resolve most disputes at the job level.

After World War II, competition for construction contracts became intense, and contractors were forced to accept lower profit margins. Further, construction contracts became much more complex, and the construction process was burdened with non-technical demands such as environmental regulations, governmental and socio-economic requirements and public interest group pressures.

The financial stability of many contractors with tight margins required that they pursue all available means to protect their bottom line, and a growing body of lawyers and consultants stood ready to assist them.

As this deterioration became more evident, and relationships became more adversarial, the construction industry sought sensible solutions. Arbitration became more popular, as it was less expensive and faster than litigation. However, it became increasingly more costly and time consuming, less satisfactory, and adversarial.

Although arbitration continues to offer certain benefits unavailable in litigation – primarily the use of neutrals experienced in the field from which the dispute arises – the cost and time of arbitration today can easily rival that of complex litigation. The ensuing movement away from litigation and arbitration is marked by several events that led to development of the DRB concept.

In 1972 the U.S. National Committee on Tunneling Technology sponsored a study of contracting practices throughout the world to develop recommendations for improved contracting methods in the United States. The study concluded that contracting practices in the United States formed a serious barrier to the containment of rapidly escalating construction costs and contract disputes.

Results were presented in the report *Better Contracting for Underground Construction*, published in 1974. The *Better Contracting* report frequently commented on the deleterious effect of claims, disputes, and litigation upon the efficiency of the construction process. Many recommendations were aimed at mitigating this problem. Over the years, an increasing number of consulting engineers and owners adopted its recommendations.

This report exposed many of the problems facing the construction industry and increased awareness of the high cost of claims, disputes, and litigation to the industry and to the public. In 1975 the underground industry first used the DRB process during construction of the second bore of the Eisenhower Tunnel on I-70 in Colorado. It was an overwhelming success; the DRB heard three disputes, owner-contractor relations were cordial throughout construction, and all parties were pleased at the end of the project.

Other successful DRBs followed, and soon other sectors of the construction industry began to recognize the unique features of DRBs for resolving disputes. The record during the next three decades, as illustrated in the bar charts in Appendix A, shows the dramatic increase in use and success of DRBs, not only in underground, but in highway, heavy civil, process and building construction. As the success of the DRB process became more apparent, the use of DRBs greatly expanded in North America as well as throughout the world.

The Dispute Resolution Board Foundation (DRBF) was established in 1996 to promote use of the process, and serve as a technical clearinghouse for owners, contractors, and Board members in order to improve the dispute resolution process. The DRBF has initiated programs for providing DRB information and educational opportunities for all parties involved in construction disputes. For more information on the Foundation, see www.drb.org.

2 – 2 Member Selection

Selection of Board members is critical to the entire DRB process. This chapter discusses the appropriate time period for establishing the DRB, includes the criteria for DRB membership, describes how the selection process works, and points out potential problems to be avoided.

1. When to Establish the DRB

Board members should be selected and the DRB established before site work commences. Many times the relationship between the parties becomes strained soon after award of the contract, when issues relating to submittals, site preparation and utilities are discovered. It is important that the DRB be activated as soon as possible after award of the contract to be available as a resource to help facilitate communications and resolve issues.

Delay in the selection and approval of the Board members can affect the review of disputes generated during mobilization and the early stages of the work. If the DRB is not established, it will be unable to respond in a timely manner and hearings of disputes generated in that time period will be conducted by a DRB lacking contemporaneous knowledge of the circumstances of the dispute. Success of the DRB

process also depends in part on the parties and the Board members developing rapport, and getting to know and trust each other takes time.

The first DRB meeting should be set as soon as possible after site work begins. Early Board member selection and DRB startup cannot be over-emphasized.

2. The Importance of Member Impartiality and Neutrality

An essential element in the DRB process is that each contracting party be completely satisfied with every Board member. Both parties must carefully investigate nominees to ensure that each nominee is experienced and technically qualified. More importantly, each party must be satisfied that the nominees are impartial and have no conflicts of interest. If either party is uncomfortable with a nominee, it not only has the right to reject that nominee, it must reject that nominee, or the DRB process may not be effective.

3. Identifying Experienced and Impartial Candidates

Frequently, the contractor and owner will know one or more qualified candidates. If a party does not have such knowledge, it can obtain information from someone who has had DRB experience or from the resumes on the DRBF web site. Alternatively, look at the tabulation of DRBs on the web site and inquire of owners or contractors who have had DRBs. In some cases, owner agencies solicit letters of interest in trade journals prior to contract procurement.

4. Avoiding the Perception of Bias

For the purposes of this section, the following definitions apply:

1. Party directly involved: The owner, the contractor and all joint-venture partners on the project
2. Party indirectly involved: A subcontractor, supplier, designer, architect, or other professional service firm, or a consultant to any party on the project
3. Financial ties: any ownership interest, loans, receivables or payables, etc.

Because of the importance of Board member impartiality and the serious consequences that conflicts of interest have on the dispute resolution process, the following guidelines are recommended.

1. To be eligible for selection, Board members must not have:
 - a. Financial ties to any party directly or indirectly involved in the contract.
 - b. Be currently employed by any party directly or indirectly involved in the contract.
 - c. Been previously a full-time employee of any party directly involved in the contract, unless specific written permission from the other party is obtained.
 - d. A close professional or personal relationship with a key member of any party directly or indirectly involved in the contract that could give rise to the perception of bias.

- e. Any financial interest in the contract or project, except for DRB services.
- f. Any prior substantial involvement in the project, in the judgment of either party.

2. While serving on the DRB, Board members must not:

- a. Be employed, either full-time or as a consultant, by any party that is directly involved in the contract, except for services as a DRB member on other contracts.
- b. Be employed, either full-time or as a consultant, by any party that is indirectly involved in the contract, unless specific written permission from the other party is obtained.
- c. Participate in any discussion regarding future business or employment, either full-time or as a consultant, with any party that is directly or indirectly involved in the contract, except for services as a DRB member on other contracts, unless specific written permission from the other party is obtained.

The repeated selection of the same individual by either (1) a particular owner or contractor, or (2) only owners or only contractors can lead to the perception of bias. While individuals in these categories may be completely impartial and neutral, it is the perception of bias that is the concern. The important point is that both parties should avoid selecting Board members that may engender the perception of bias. It is difficult to envision a specification that addresses all possibilities of perceived bias. However, the parties are in control of this situation and each party must remember that the other party needs to feel comfortable with every Board member if they are going to trust these individuals to recommend resolution of their disputes.

5. Qualifications of Board Members

When nominating prospective Board members, the contracting parties should recognize the following necessary attributes:

- 1. Complete objectivity, neutrality, impartiality and freedom from bias
- 2. Freedom from conflict of interest for the duration of the contract
- 3. Experience with interpretation of contract documents
- 4. Experience with resolution of construction disputes
- 5. Experience, training, and/or understanding of the DRB process
- 6. Dedication to the objectives and principles of the DRB process

In addition to these attributes, the parties must evaluate qualifications of the prospective members for the specific project, including:

1. Experience with the type of construction involved
2. Experience with the specific construction methods to be used
3. Experience with the dispute-prone facets of the work
4. Demonstrated ability to write in a clear, concise, and convincing manner
5. If considered for Chair, expertise in running effective meetings in difficult circumstances

6. Methods of Member Selection

Selection of impartial and neutral members by any method depends on both parties thoroughly investigating the proposed members and rejecting those where bias or the perception of bias is detected. Several methods have been used for selecting members:

1. The parties jointly select all three members.

The parties meet and discuss the qualifications of all prospective Board members and jointly select the three-member DRB. The parties may select the Chair, or delegate that responsibility to the selected members themselves. One advantage of this method is the elimination of any feeling of allegiance to the party that selected him or her.

Another advantage is that the parties can better assure that the Board members have the attributes and experience required to handle the disputes that they believe might occur on the project. This method allows the parties to choose all three members without the need to accept a third member nominated by others. It also provides good opportunities to introduce new members to the process. This method is preferred by many for the selection of Board members.

2. Each party proposes a member for approval by the other party and the two selected Board members nominate the third.

Each party proposes a member for approval by the other party. Once approved, the two appointed Board members nominate the third member, subject to the approval of both parties. The third member, not nominated by either party, generally serves as Chair of the DRB. This method has occasionally empanelled members who were biased or perceived to be biased toward the nominating party. Even if the resulting members are truly neutral, this method of selection can result in Board members being known as “the Owner’s representative” or “the Contractor’s representative,” thereby giving the perception of bias.

Although bias may be recognized during the selection process, the parties naturally hesitate to reject the other’s nominee in an effort to minimize disagreements. Since this method has been the most commonly used many owners are most comfortable with it.

3. Each party proposes a slate of candidates, from which the other party makes a selection and the two selected Board members nominate the third.

Each party proposes a list of three-to-five prospective Board members. Each party then selects one from the other's list. If a party were to reject the entire list, then a new list is submitted. The two selected Board members nominate the third, subject to approval by both parties.

Again, the third member, not selected by either party, commonly serves as Chair.

7. Process for Member Selection

Selection of members usually takes the following steps:

1. Identify the appropriate experience.

2. Identify candidates with the appropriate experience, who are available, have no immediately apparent bias, and are interested in serving on the DRB.

3. Send candidates a description of the work, a copy of the DRB specification and TPA, and a list of the directly and indirectly involved parties.

4. Obtain from all candidates:

- Resume
- Tabulation of previous experience on active and completed DRBs including:
 - o Name of each project;
 - o Name of owner;
 - o Name of contractor;
 - o Party by whom selected, when applicable;
 - o Names of other members; and
 - o Number of disputes heard.
- Statement of availability and interest in serving
- DRB trainings – course name and year attended
- Disclosure statement including:
- Previous involvement with the project
- Previous involvements and relationships with all parties directly and indirectly involved in the project

- Personal and professional relationships with any key members of any of the parties directly and indirectly involved in the project.
- Current billing rate

5. Evaluate qualifications of potential candidates.

6. Do a background check of preferred candidates with owners and contractors who have been parties to previous projects where the preferred candidates served on DRBs.

7. If desired, interview preferred candidates.

8. Select and notify those Board members.

9. Send each selected Board member a copy of all contract documents. If the third member has not been selected by the contracting parties, provide each selected member with the information obtained in item 4 above on the other selected Board member, for review and guidance in selecting the third member. Information on desirable candidates who were considered by the parties is sometimes provided to the first two selected members for their consideration in selecting the third member.

8. Selecting the Third Member

In addition to possessing the necessary attributes and qualifications listed above, the third member should supplement the technical expertise and background of the first two members, in order to provide experience in as many facets of the work as possible. The third member, if he or she is to act as Chair, should have DRB experience as well as expertise in running effective meetings. If the third member has not been jointly selected by the contracting parties, the first two members will be responsible for the selection of the third.

If these two members are well acquainted, a telephone conference may be sufficient to identify a suitable third member. In some cases, it may be advisable

for the first two members to meet personally and discuss possible candidates. After the third member candidate has been identified, send him or her the information identified in item 3 above. The information listed in item 4 above should be submitted by the candidate to the two selected Board members for their review. The first two members may wish to interview the candidate.

Once the third member is nominated, a package containing the nominee's information (item 4 above) should be sent to each of the parties for their consideration in approving the final member.

The third member frequently acts as Chair of the DRB, however, this is not required and may not be best. The Chair should be chosen for his or her experience on DRBs and ability to take charge and lead the DRB activities. When the third member does not have DRB experience and one of the other

members does, it is appropriate and usually best for the other member to act as Chair unless either party objects. The specification should not require that the third member Chair the DRB.

9. Construction Attorneys on DRBs

Within the United States, there has been considerable controversy over whether an attorney should be appointed to a DRB. The primary concerns seem to be that:

- a) Attorneys on DRBs may result in the hearings becoming more judicial and,
- b) Once intimately involved in the process, the well-organized legal community may alter the process in ways that will render DRBs less effective.

To date many attorneys have demonstrated a keen interest in resolving disputes without recourse to litigation and are strongly supportive of the DRB process. Attorneys who are dedicated to this objective and to the DRB process, while satisfying the other criteria for membership, should be eligible to serve on DRBs. These attorneys, in turn, must assume responsibility for preventing others in the legal community from altering the process in ways that might ultimately compromise its success.

Many attorneys meet the requirements outlined in the guide specification, hold degrees in engineering and have practiced law involving construction cases. Many DRBs in the USA have included attorneys as Board members with commendable results.

10. Personal or Professional Liability of the Board Members

The TPA typically includes the following statement:

“Each Board member shall be held harmless for any personal or professional liability arising from or related to DRB activities. To the fullest extent permitted by law, the OWNER and the CONTRACTOR shall indemnify and hold harmless all Board members for claims, losses, demands, costs, and damages (including reasonable attorney fees) for bodily injury, property damage, or economic loss arising out of or related to Board members carrying out DRB activities.”

This language should not be modified. Doing so would suggest an attempt to hold the Board members personally or professionally liable for their efforts to resolve disputes for the parties. In addition, it would underscore a lack of confidence in the DRB process, and create an atmosphere that is not conducive to dispute resolution.

Board members offer their services and recommendations based on many years of experience in the construction industry and on a belief that the DRB process leads to more effective dispute resolution than binding arbitration or litigation. Many desirable Board members come from the ranks of retired or semi-retired members of the construction industry.

Attempts to make Board members professionally liable for their services is likely to result in such experienced personnel becoming unwilling to serve.

Multi-national practice normally includes attorneys. See Part 4 for further information.

1 . 3 Benefits

The DRB process provides benefits to all participants on the construction project —and to the project itself. These benefits accrue in terms of both claim avoidance and resolution of disputes.

The primary benefit is claim avoidance. The very existence of a readily available dispute resolution process that uses a panel of mutually selected, technically knowledgeable and experienced neutrals familiar with the project, tends to promote agreement on problems that would otherwise be referred to arbitration or litigation after a long and acrimonious period of posturing.

Experience has demonstrated that the DRB process facilitates positive relations, open communication, and the trust and cooperation that is necessary for the parties to resolve problems amicably. There are several reasons for this result. The parties are reluctant to posture, by taking tenuous or extreme positions, because they do not want to lose their credibility with the Board members.

In addition, since the DRB encourages the prompt referral of disputes and handles disputes on an individual basis, the aggregation of claims is minimized, thus avoiding an ever-growing backlog of unresolved claims which can create an atmosphere that fosters acrimony.

The DRB encourages the parties to settle claims and disputes in a prompt, businesslike manner. During the periodic meetings the Board members ask about any potential problems, claims, or disputes and review the status report of outstanding claims. The parties are led to focus on early identification and resolution of problems and, in the event of an impasse, use the DRB for prompt assistance. On many projects the parties resolve all potential disputes with none formally referred to the DRB.

The DRB process has been found to be more successful than any other method of alternative dispute resolution for construction disputes. This process has experienced a very high rate of success in resolving disputes without resorting to litigation – the resolution rate is over 98 percent to date.

Several unique factors account for this remarkable statistic. A DRB provides the parties with an impartial forum and an informed and rational basis for resolution of their dispute.

The Board members have knowledge and experience with (1) the design and construction issues germane to the project, (2) the construction means and methods employed on the project, (3) the interpretation and application of contract documents, and (4) other processes of dispute resolution.

As a non-binding process, the parties remain in control of the ultimate resolution and admissibility of the Board's recommendation(s) in subsequent proceedings. The DRB process is very cost effective when compared with other methods of dispute resolution,

and especially so if the high costs of arbitration or litigation are considered. As a "standing neutral" method, the DRB process typically addresses disputes soon after an impasse between the parties.

Early resolution greatly reduces costs to the parties, such as legal and consultant fees, as well as the loss of productive time for owners and contractors. The DRB process provides a better-informed dispute analysis because individuals with first-hand knowledge of the facts are readily available and additionally, in many instances, the Board members can actually observe the field condition or construction operation that is related to the dispute.

Cost savings actually begin with lower bids, including subcontractor quotes, because of reduced risk of prolonged disputes. It is generally accepted that fair contracting practices result in lower bids because litigation contingencies are reduced. When a contract includes a DRB provision, prospective contractors know that if disputes occur, they will be considered expeditiously by a mutually selected panel of technically knowledgeable and impartial neutrals already familiar with the project. Thus, the risks of long delays and substantial costs are significantly reduced.

In addition, earlier resolution means an earlier start to the payment process for contract modifications accepted by the owner. From the owner's perspective, having a DRB on a construction project encourages on-going dispute resolution, and does not leave them to the end of the project. This permits the owner to more closely control the budget and avoid the high expense and unpredictability of post project litigation. In addition, a DRB recommendation documents the basis upon which the parties may reach resolution.

A DRB recommendation is especially helpful for public owners, because frequently the decision to accept settlement of a dispute must be approved by a governing board such as a school board, city council, county board of supervisors, or other similar public governing board. A well-reasoned analysis of the dispute by a panel of neutral professionals with construction backgrounds provides credibility to support the public owner's decision to accept the DRB recommendation.

The DRB process is flexible in fulfilling the needs of projects because it has several unique advantages over other means of dispute resolution. The advantages include:

- Board members continually monitor the project during construction. This allows them to readily understand what has occurred in a way no other process can match.
- Board members get to know and understand the individuals managing the contract and viceversa. This builds a relationship of respect and trust with the parties during construction.
- The DRB may provide advisory opinions to assist in mitigating potential disputes. This occurs long before the disputes would otherwise be resolved through any alternative process.
- Board members' ongoing knowledge of the project facilitates finding the truth. This provides strong support for the DRB's recommendation.
- Although DRB practice provides for recommendations that are not binding on the parties, history shows that they are almost always used in reaching a resolution to the dispute. In the few instances where the dispute has progressed to subsequent proceedings, admissible DRB recommendations have carried considerable weight because they were made by independent, experienced professionals, who had knowledge of the events as they occurred.

While a number of other methods for resolving disputes exist, none of them contain the added benefit of independent, experienced professionals, who visit the site during performance of the project. These other methods only start to address the problem after the dispute has been formalized, without the benefit of having followed development of the project. Usually this is after the project has been completed and the participants have scattered, retired or even passed away.

When "partnering" is conducted on a construction project, the presence of a DRB has the effect of enhancing the partnering process by encouraging the parties to fully utilize the partnering process for dispute resolution.

In summary, experience has shown that the DRB's presence influences the behavior of the parties in such a way as to minimize disputes. When conflicts do arise, the DRB is able to make recommendations for settlement quickly, before adversarial attitudes escalate to the extent that construction is compromised.

DRB record through 2011

North America

The DRB process has been used on 976 completed projects in North America with a total construction value of over \$40 billion. Considering only completed projects:

- Average project value was \$41 million.
- The average number of disputes per project was 1.3.
- 60% of the projects had no disputes.
- Considering only completed projects with disputes that went to the DRB, the average number of disputes per project was 3.3.
- 98.8% of the projects were completed without arbitration or litigation. In other words, about one project in 100 had disputes that could not be settled with the help of the DRB.

In addition, DRBs are active on 215 on-going projects with a total value of over \$14 billion, bringing the North American total to roughly 1200 projects, amounting to \$54 billion in construction.

International

Outside North America forty-six projects using Dispute Boards (DBs) have been reported. (DB is used to avoid the confusing array of terms used in international practice.) Their combined construction value is US\$35 billion, an average of \$766 million each. The World Bank requires DBs to be used on all projects larger than US\$10 million.

DBs have been used in Australia, Denmark, Ethiopia, Hong Kong, India, Italy, New Zealand, Peoples Republic of China, Poland, Romania, and the UK. International development banks have recently funded multinational projects with DBs in India and Vietnam.

Combined totals: 1,237 Projects – US\$ 89 Billion

See Appendix A for a year-by-year summary of the growth of the DRB process. The Database in Appendix A lists all reported DRB projects.

Design Guidelines (Constructability)

The objective of this procedure is to make optimum use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives.

A common view of design guidelines involves only:

- Determining more efficient methods of construction after mobilization of field forces;
- Allowing construction personnel to review engineering documents periodically during the design phase;
- Assigning construction personnel to the engineering office during design; and
- A modularization of pre-assembly program.

In fact, each of these represents merely a part of the optimization process. Yet only through effective and timely integration of construction input into planning, design, and field operations will the potential benefits of optimization be achieved.

The planning/execution phases for a typical major industrial project involve conceptual engineering, detailed engineering, procurement, construction, and start up. Construction optimization analysis should begin during the conceptual stage, at the same time as operability, reliability and maintainability considerations surface.

It can then continue through the remaining phases. Planners must recognize that the payoff for optimization analysis is greatest in the earliest phases of a project, growing progressively less, but never ceasing, until the end of the project.

In modern engineering jargon this process of design optimization is called constructability.

Constructability

Constructability analysis is a form of both Value Engineering (VE) and Value Analysis (VA) that focuses mainly on the construction phase.

Constructability decisions are oriented toward:

- Reducing change orders and disputes;
- Reducing total construction time by creating conditions that maximize the potential for more concurrent (rather than sequential) construction, and minimize rework and wasted time;
- Reducing work-hour requirements by creating conditions that promote better productivity or creating designs that demand less labor;
- Reducing cost of construction (and tools) by reducing requirements for such equipment, creating conditions that promote more efficient use of the equipment, and minimizing the need for high-cost, special purpose equipment;
- Reducing materials costs through more efficient design, use of less costly materials, and creation of conditions that minimize waste;
- Creating the safest work place possible, since safety and work efficiency go hand in hand; and
- Promoting total quality management (TQM).

Essential Elements Of Constructability

Three elements must be present if a constructability program is to realize its full potential.

First

Constructability must be viewed as a program that requires proactive attention. The mistaken idea that constructability is a review of designs by someone familiar with construction is totally wrong. By the time designs are ready for review, it may be too late to change anything, and, if such changes are made, they will be costly.

Instead, individuals with a knowledge of construction must jointly participate with the other interested parties—owner, engineer, operator, and maintainer- to brainstorm concepts and approaches before they are committed to a drawing. In other words, constructability is a component of planning that must be included in all phases.

Second

Constructability is a team effort. Only if the interests of all parties are jointly represented in all decisions will the optimum solution be realized. Reducing construction costs is certainly an important objective, but doing so must not compromise other needs.

Third

Constructability must have management commitment and support. The time and resources needed for such a program must be made available if the program is to be a success.

A Constructability Program

While no single program will fit every program, the consensus is that most successful constructability programs have the following elements:

- Clear communication of senior management's commitment to the program;
- Single-point executive sponsorship of the program;
- An established ministerial policy and program, as well as tailored implementing programs for each project;
- A ministry database compiling "lessons learned and examples;
- Orientation and training as needed; and
- Active appraisal and feedback.

Constructability Culture

Constructability works best when it is an accepted part of the way an organization operates. If the subject is given enough emphasis and attention over time, it becomes ingrained within the organization reaching what it can be called a constructability culture.

Every staff person must feel part of the system, since their input is frequently sought in constructability brainstorming session and their ideas are welcome additions to the database.

The Management Approach

Recognize that startup and construction drive engineering and procurement scheduling

- Develop a network schedule as early as possible; and
- Include engineering and procurement packages in the control schedule.

Use contracting and management approaches that promote construction efficiency

- On engineering-procurement-construction projects executed on a fast-track basis(overlapping phases), use single management of the total effort from the outset of conceptual engineering;
- Use construction contract packages of a quality that will allow fixed-price bidding as a means of reducing or eliminating the problems associated with changes;
- Do not start on a work package until the availability of all required resources is assured (personnel, materials and support equipment.);
- Work with the owner to use any existing facilities or services rather than creating duplicate ones for the construction period;
- When packaging designs for specialty subcontracting, consider normal jurisdictional lines so that packages logically fit the specialty contractors involved and do not require sub-tier subcontracting; Plan the release of contracts to take advantage of favorable construction weather;
- Provide adequate planning time for contractors and subcontractors in the bidding-award process;
- Keep the control schedule at a summary level;
- Ensure that project milestones are reasonably attainable considering both construction and procurement time;
- Do not impose unnecessary hold points for quality checks;
- Keep requirements for owner involvement in the project(such as reviews and approval) to a minimum;
- Issue instrumentation, piping and insulation packages as early as possible, since these require the most field time to execute; and
- Use a contract form that incorporates incentives designed to reduce construction costs. For example, include Value engineering (value analysis) clauses that provide for sharing in savings engendered by adopting cost improvement suggestions made by the contractor.

Ensure that project requirements and conditions are understood

- Make certain that field conditions are accurately reflected on design documents;
- Identify all access routes and any limitations on their use;
- Be sure that all parties understand their roles and responsibilities with regard to providing equipment, the use of project areas and facilities, security and gate control, administrative policies, etc;
- Identify disposal areas for excavations, vegetation, non-hazardous waste and hazardous waste; and
- If working in or adjacent to an operating facility, identify all constraints that the situation presents.

Design Phase

Emphasize standardization and repetition

Standardization and repetition maximize application of the learning curve to the work force, permit volume buying of materials, and simplify purchasing and warehousing.

- Standardize structural members, foundations, bolt sizes, and other components as much as possible;
- Dimension concrete components to take advantage of readily available commercial form sizes; and
- Repeat designs throughout the facility. This will reduce design costs while promoting the learning curve effect during construction.

Take maximum advantage of readily available, off-the-shelf materials and components

- Maintain access to commercial catalogs of equipment and materials;
- Make maximum use of vendor representatives to assist in item selection;
- Survey the area to determine which materials are most readily available locally;
- Require procurement specialists to publish bulletin on a regular basis, identifying materials and items in short supply on the world market and approximating order-ship-deliver lead times of all equipment and materials regularly used in the contractor's work; and
- Consider using pre-engineered structures in lieu of specially designed structures.

Choose configurations that facilitate or simplify handling and erection

- Require design engineers to develop recommended construction methods and include them with the design. This will force them to think constructability;
- When designing steel members and connection, remember that erection is much easier if a member to be connected to another can be temporarily positioned on top of the in-place member or on a pre-installed seat on that member before bolting or welding;
- Take advantage of modularization. Vendor-assembled modules are produced under more favorable conditions than those in the field. This ensures better quality while reducing field erection time;
- Use designs that employ pre-cast concrete components which can be cast in a controlled environment, delivered to the project when needed without intermediate handling, and directly installed;
- Avoid components that require special care and handling in the field;
- Create designs that require special care and handling in the field;
- Include special foundations in the design of structures for mounting climbing cranes and elevators if such equipment will be used during construction;
- Locate heavy and/or bulky items within structures so that as many as possible can be hoisted from a single location of the lifting equipment;
- Maximize the use of straight runs and perpendicular tie; avoid curves (particularly complex curves) and angles;
- Consider limitations of standard transport and lifting equipment when designing components. If necessary, design over-size items so they can be fabricated, transported and erected in parts;
- Use designs that minimize the need for temporary structures such as forming, shoring, bracing, and tie-downs;
- For multiple electrical and piping systems, consider using common utility tunnels or conduits through which multiple system can be installed (and easily removed or expanded later if necessary) rather than using direct embedment or multiple conduits;
- For multiple foundations in the same area, establish the same bottom elevation for all foundation so that excavation can be handled on a mass basis rather than individually;
- Design engineered items so that they can be dressed out on the ground for installation. In other words, design any components that cross several items (such as ladders or raceways) so portions of them can be pre-assembled with the engineered item to create a module;
- Design electrical/instrumentation connections with plug-in configurations rather than a labor-intensive connection;
- For complex wiring networks, specify the use of wiring harnesses that are factory assembled and coded;
- In lieu of cast-in-place reinforced walls, consider using the lift-slab technique;
- On multi-storied buildings with reinforced concrete floors, consider casting the floors one at a time on the lower deck and lifting them into position. This will eliminate many bracing and scaffolding requirements;
- In lieu of specifying concrete block wall using conventional masonry techniques (mortar between blocks), specify simple stacking of blocks followed by

plastering of both sides with fiber-reinforced mortar. The result is a better-looking, stronger wall that can be constructed more quickly by less skilled personnel;

- When designing connections for hydraulic or other systems, create unique designs for each category of connection to avoid any potential for connection mixups in the field;
- When designing or specifying large components (such as vessels or rotating equipment), include lifting hooks or other handling devices/features in the design so field erectors will not have to improvise the rigging and handling; and
- Provide designs for special measuring devices, templates, or other erection aids that may be useful for aligning or achieving tolerances.

Design Phase.....

Create designs that promote accessibility and provide adequate space for construction personnel, material, and equipment

- Consider interstitial designs for buildings. This means providing space above all operating floors that is zoned for various operating systems. The vertical clearance in this space should be enough to allow for easy movement of workers. This design greatly simplifies construction, and facilitates future maintenance and upgrading;
- Locate electrical pull boxes with adequate space around them to simplify cable pulling;
- Size pipe racks to allow easy addition of new lines;
- Incorporate access openings in both exterior and interior walls;
- Provide for reasonable working space around all installed components;

Adapt designs and strategies to project location and time

- In an area with a very short construction season or limited labor availability, make maximum use of factory-assembled modules and components that have been designed for rapid assembly;
- Consider local labor and specialty contracting capabilities;
- Select designs that best use these capabilities, since they will be less costly than imported capabilities;
- If the local population lacks needed skills, maximize the use of remote, off-site fabrication;
- In a union environment, consider jurisdictional rules and wage scales when selecting a design approach;
- Avoid designs whose construction is particularly weather sensitive;
- Avoid the use of materials expected to be in short supply or subject to unusual price inflation during the duration of the project;

Use realistic specifications

- Do not require unnecessarily tight tolerances. For example, the imposition of ASTM or nuclear-quality specifications on ordinary construction can be overkill;
- Do not specify an expensive, hard-to-install material when another is far more economical. for example, PVC conduit is lighter, more flexible, and easier to work with than rigid conduit;
- Designers must learn to challenge each specification. Is it the best for the project at hand?;
- Maximize the use of performance rather than proprietary or descriptive specifications to give greater feasibility to the field;
- Minimize the number of specifications applying to the same type of work, such as concrete, bolt sizes, etc.;
- Consider field installation costs in the economic evaluation of material or equipment choices;
- Include in the specification file information on where and why a given specification is applicable. This will assist engineers in selecting the best specification for the job at hand;
- Maintain and continually update a file of “lessons learned” from previous projects. Make these the subject of training sessions;
- When possible, allow for alternates in case the primary method or item is not achievable;
- Include requirements for packing and shipping critical items that assure undamaged delivery of them; and
- Specify testing methods and procedures that are reasonable for the field.

Assure quality and completeness of design deliverables (such as drawing and specifications)

- Be willing to hire outside expertise when the in-house staff does not have the talent or time needed to prepare quality deliverables;
- Establish a complete system of reviews and checks to ensure accuracy of dimensions, compatibility of drawings and specifications, and consistency of flow diagrams, piping and instrumentation diagrams, etc.; and
- Use physical or computer models to be sure there are no interference among systems.

Incorporate safety in designs

- Specify locations where beams and columns should be drilled to accommodate safety cables; and
- Design components to facilitate pre-assembly on the ground and lifting into final position in modular form.

Construction Phase

Plan and develop the site to promote worker efficiency

- Use cardboard cutouts that have been cut to scale to represent temporary construction facilities on an overall map of the site drawn to the same scale; brainstorm the best layout of the site to support construction;
- Provide for dust control on roads;
- Develop and stabilize all heavily used foot traffic areas around the construction site;
- Design the construction road network to isolate administrative traffic from traffic that directly supports construction activity;
- If space permits, develop a perimeter road around the site. This will help prevent traffic congestion and interference;
- Design lay down areas as a series of alternating roads and narrow laydown pads that allow any item in the lay down area to be handled using lifting equipment on the adjacent road;
- Shape all lay down areas for drainage, and construct a supporting drainage network. Stabilize surfaces where material will be placed and spray them with weed killer or cover them with plastic sheeting to prevent grass and weed growth. Make cribbing available for off-ground placement of materials;
- Do not allow long-term storage of any materials adjacent to a facility under construction. Leave clear space around its perimeter that is available for construction equipment and pre-positioning of materials needed for current work activity;
- Locate smoke- and dust-producing activities downwind from the center of construction activity;
- Locate/relocate portable facilities to minimize travel distances from worker concentrations;
- Regularly clean up and remove construction debris and garbage from work areas;
- Schedule work shifts to minimize interference with local traffic patterns and to avoid excessively hot portions of the day;
- Establish grids for construction electrical, gas, water and compressed air service with distribution points in convenient locations. Design connection trees that are modular and can be moved from distribution point to distribution point as needed;
- Have portable lighting sets available to illuminate work areas where natural illumination is poor;

Perform work when and where it is most efficiently accomplished

- Complicated process equipment is often best assembled in modules at a factory, requiring only positioning and connecting at the project site. This takes advantage of the factory environment, which generally has more skilled workers, better productivity, and better working conditions. Pay scales also may be more favorable. Module assembly can be accomplished in parallel with other construction work, which permits field construction schedules to be shortened;

- On-site prefabrication yards for forms, steel cages, and piping spools allow such work to be accomplished under the best conditions and, look for the yards to be weather-protected to allow work to continue during inclement weather;
- Work on the ground can be accomplished more efficiently and safely than in the air. For example, insulated components can be at least partially insulated while on the ground, with only the finish work left for the air;
- During construction of multi-level structures, pre-position installed equipment and other materials on the various levels as decks are completed to avoid later problems of access;
- In a congested area where multiple piping and electrical systems are competing for space, install the heavier, bulky components first, leaving the lighter, more flexible items for last;
- When building construction roads, include non-drainage culverts and ducts where future utility lines are expected to be located so that roads will not be cut up later to accommodate laying these lines;
- Fabricate like components, such as rebar cages, on an assembly line basis; and
- Allow materials to be delivered to the site only during off-shift hours.

Minimize unscheduled and unproductive activity

- Use detailed work package planning and adopt a philosophy of never starting on a work package until personnel, materials, and equipment availability is assured;
- Use separate crews for materials pickup and spotting at the point of use to keep the supervisor with the crew;
- Obtain old trailers to use in picking up and positioning materials to be used by crews. Materials can be moved directly from the trailers to the point of placement, thus eliminating multiple handling;
- To avoid the inevitable productivity degradation associated with rework due to changes, use a special crew within each craft to handle rework, thereby allowing the primary crew to move on to other first-time work;
- If special equipment, such as heavy cranes, must be rented to support certain phases of a project, concentrate the scheduling of work requiring this equipment into as short a time span as possible;
- Use bar codes or other codes to identify materials in storage. This will speed up identification time;
- For critical layouts, use two separate survey crews, each starting from the primary benchmark, to lay out construction. This will minimize the potential for layout errors;
- When storing materials in a laydown area, store them in order of retrieval. This will minimize damage and loss associated with handling and re-handling;
- Paint distinguishing marks (such as a North arrow or “Top”) on components to facilitate their final positioning. This will eliminate lost time due to misplacement;
- Assign laydown areas by discipline;
- Place tool boxes, tool rooms, parts lockers, etc. on wheels or skids to permit their relocation as work moves. Install lifting hooks on them so they can be handled with cranes;

- Use bar coding and computerized inventory control to speed tool issuance. This is even more effective if employee ID badges have a bar code so that the employees accessing the tools can be quickly identified; and
- Consider using “just-in-time” materials deliveries from suppliers to eliminate the cost and effort of intermediate storage and handling.

Employ work-saving tools/equipment and modern construction techniques

- It is impossible to keep up with the market, since new and better technology is always introduced. Ask vendors to demonstrate their equipment. They are usually receptive to providing training as well;
- Use automatic welding machines, nail guns, cordless tools, laser levelers, craftsman stilts, etc.;
- Use commercially available material items designed to speed the construction process. for example, commercial forms are available for concrete work, and a complete family of high chairs, clips and other gadgets can speed the placement and tying of reinforce steel. Comparable items are available for carpentry, electrical, and other work;
- Have a representative of the organization attend trade shows to learn what is on the market. Bring back literature and make it available to those with a need to know. Consider making a video tape using scenes from a trade fair or pictures from brochures with appropriate narrative, and distribute this video among the staff;
- Subscribe to trade publications, which contain many advertisements describing innovative products. Prepare a scrapbook of those with the most potential and make it available to the staff;
- Cut out articles from trade and other publications that describe innovative techniques used by competitors. Compile them in a scrapbook that is available to the staff;

Sequence work for optimum efficiency

- When the facility to be built includes repeated designs, try to schedule work on repeated elements in series to take advantage of the learning curve;
- Pre-position and temporarily lash heavy and/or bulky components within a structure when access is most favorable;
- On large concrete slabs, pour sections in checkerboard fashion to reduce the need for forms;
- Hold stairs and platforms early so they can be used in lieu of scaffolding and elevators;
- Schedule construction activity around the weather. For example, some building may be erected early to provide protected work space for later construction; and
- With owner concurrence, construct selected permanent facilities early and use them for construction support.

Employ construction practices that emphasize safety

- Erect stair towers early so they may be used for access during construction;

- Use remotely-activated release devices on rigging equipment so workers will not have to be hoisted to release them manually from equipment lifted into place;
- Have safety equipment vendors demonstrate available state-of-art safety equipment and provide any training needed; and
- Install safety lines and other safety devices on structural members before they are lifted into position.

Employ Value Engineering principles to solve field problems

- Describe the goal in terms of a verb and a noun (Example: move materials);
- Identify all options possible;
- Evaluate all options, eliminate those not practical, and make a short list of options with most potential;
- Evaluate the remaining options in detail; and
- Select the best option.



Critical Path Manipulation Techniques

There are various ways of creating, erasing, decreasing, inflating or hiding float and manipulating the critical path of a CPM network.

These manipulation techniques can be used prospectively during the preparation of the baseline and the project updates as well as in the process of preparing the forensic models. This does not mean that the observational methods are immune from manipulation.

Since they rely on the baseline and the updates, the source schedules must be checked for manipulation prior to use in the forensic process. During the forensic process, the dynamic methods are also subjected to manipulation through the frequency, duration and placement of analysis intervals and through subjective assignment of progress data in reconstructing updates.

The use of these techniques per se is not evidence of intentional manipulation. It must be stressed that there are legitimate uses and good reasons, even if limited, for these features; otherwise they would have never found their way into the software. Even in the absence of 'good reason', the feature could have resulted from laziness or even misguided attempts to improve the schedule. At any rate, schedules used for forensic schedule analysis must minimize the use of these techniques.

Two major software products, *Primavera Project Planner P3 & P6* and *Microsoft Project (MSP)*, representing a significant market share of the scheduling trade are used as references.

Resource Leveling & Smoothing

This technique uses available float to balance the resources necessary for executing the schedule. Some analysts maintain that resource leveling is the technical embodiment of pacing.

Software Definitions

- Resource levelling is the process of determining and minimizing the effect of low resource availability on the schedule. Use resource leveling to resolve resource conflicts by rescheduling activities to times when sufficient resources are available. Split activities to work around times when resources are not available; stretch activity durations to reduce their resource per time period requirements; or compress activity durations to take advantage of ample resource supplies.

Resource levelling uses the normal and maximum limits established in the resource dictionary. The normal limit is used during resource-constrained levelling to take advantage of positive float within the network.

During forward levelling, activities may be shifted to a later date (the leveled date). In backward levelling, activities may be moved earlier in time.

If an activity cannot be scheduled without exceeding the normal limit and without exhausting all positive float, P3 increases the resource availability limit to the maximum level.

A resource levelling analysis report details the reasons why activities are rescheduled.

- Resource smoothing is an optional resource levelling method that resolves resource conflicts by delaying activities that have positive float. Resource smoothing uses the available positive float and incrementally increases the availability limits in ten equal steps from normal to maximum. P3 & P6 smooth only those activities that will be delayed beyond their calculated early start date due to insufficient resources. This method minimizes peaks and valleys in the resource usage profile.

Multiple Calendars

Float values are displayed using workday units defined in the underlying work-day calendar assigned to the activity instead of in calendar-day units so that activities on a chain with identical network tension may display different float values.

All things being equal, activities using a more restrictive work-day calendar, such as one that excludes the winter months for work, carry less float than if those activities used a less restrictive work-day calendar. Thus by building in or removing a few holidays in the calendar, float can be manipulated.

While highly impractical, the only way to avoid gaps, discontinuities and work-day conversions is to use only one calendar consisting of a seven-day week.

- The work periods and holidays defined for the project determine when P3 & P6 can schedule activities and resources. Primavera allows up to 31 base (activity) calendars per project. Once you add and define project base calendars, use the calendar ID to assign the appropriate calendar to each activity. Define calendars in planning units of hours, days, weeks, or months. Define an unlimited number of resource calendars, using any base calendar as a template for each one.
- Microsoft Project uses four types of calendars: base calendar, project calendar, resource calendar & task calendar.

Precedence Logic / Lead & Lag

Simple logic is finish-to-start with a lag value of zero, denoted as FS0. Other known types of logic are start-to-start (SS), finish-to-finish (FF) and start-to-finish (SF). Most software allows the use of these logic types along with the use of lead and lag values other than zero, including negative values.

The use of lag values greater than zero with FS-type of logic absorbs otherwise available float. It is possible to assign lag values that are less than zero, called negative lags. Negative lags associated with the FS-type of logic have the effect of overlapping the associated schedule activities, thereby **increasing float**.

- **Lag:** An offset or delay from an activity to its successor. Lag can be positive or negative; it is measured in the planning unit for the project and based on the calendar of the predecessor activity. Lag cannot exceed 32,000 time periods or be less than -9999 time periods. Lag decreases as you record progress (actual start). When Primavera or MS project calculates a schedule, it subtracts from the lag value the number of work periods between the project data date and the actual start date of the predecessor activity.
- **Lead Time:** An overlap between tasks that have a dependency. For example, if a task can start when its predecessor is half finished, you can specify a finish-to-start dependency with a lead time of 50 percent for the successor task. *You enter lead time as a negative lag value.*
- **Lag Time:** A delay between tasks that have a dependency. For example, if you need a two- day delay between the finish of one task and the start of another, you can establish a finish- to-start dependency and specify a two-day lag time. You enter lag time as a positive value.

Start & Finish Constraints

Setting a start constraint to a date that is later than what would be allowed by a controlling predecessor would **decrease** the float on the schedule activity. Similarly, setting a finish constraint to a date that is earlier than what would be allowed by a controlling predecessor would also **decrease** float on the schedule activity. Both techniques can be used to force activity paths to carry negative float.

There are also features that force the schedule activity to carry no total float or no free float. Also certain types constraints force the assignment of zero float value by fixing dates on which the activity will be performed, overriding associated precedence logic.

- A scheduling restriction you impose on the start or finish of an activity. Use constraints to reflect real project requirements; for example, all outdoor activities must be completed by the beginning of winter.
- A restriction or limitation that you or Microsoft Project set on the start or finish date of a task. For example, you can specify that a task must start on a particular date or finish no later than a particular date. When you add a new task to a project that is scheduled from the start date, Microsoft Project automatically assigns the “*as soon as possible*” constraint. Conversely, when you add a new task to a project that is scheduled from the finish date, Microsoft Project automatically assigns the “*as late as possible*” constraint.

Various Calculation Modes

Fundamental schedule and float calculation methods can be selected by the user, further complicating the effort to identify the critical path and quantify float. Below are examples related to various methods of schedule calculation, duration calculation, and float calculation.

Schedule Calculation

Retained Logic:

1) *One out of two types of logic* used to calculate a schedule in Primavera. If you select retained logic in the schedule/level calculation options dialog box, Primavera schedules an activity with out-of-sequence progress according to the network logic. Primavera allows the activity to begin out of sequence, but the remaining duration for the activity cannot be completed until all its predecessors complete. 2) *One out of two types of logic* used to handle activities that occur out of sequence. When used, scheduling software programs the remaining duration of an out-of-sequence activity according to current network logic - after its predecessors.

Progress Override:

1) *One out of two types of logic* used by primavera. Progress override ignores logic and affects the schedule only if out-of-sequence progress occurs. If you select progress override in the schedule/level calculation options dialog box, P3 treats an activity with out-of-sequence progress as though it has no predecessors and can progress without delay. [This is the alternate setting] 2) One out of two types of scheduling software logic used to handle activities that occur out of sequence. When specified, it treats an activity with out-of-sequence progress as though it has no predecessor constraints; its remaining duration is scheduled to start immediately, rather than wait for the activities predecessors to complete.

Duration Calculation

- ***Continuous Activity Duration:*** One out of two types of activity-duration logic used by Primavera to calculate schedules. Contiguous activity duration requires that work on an activity occur without interruption. For early dates, this type of logic affects how Primavera schedules the start dates for an activity when the finish dates are delayed by a finish relationship from a preceding activity or by a finish constraint. If you select contiguous logic, and finish dates of an activity are delayed, the start dates are delayed also. [This is the default setting]
- ***Interruptible Activity Duration:*** One out of two types of activity duration logic Primavera and MSP use to process a schedule. For early dates, interruptible scheduling affects how schedules start dates of an activity when the finish dates are delayed by a finish relationship from a preceding activity or by a finish constraint. If you select interruptible scheduling, and the finish dates of an activity are delayed, the start dates are not delayed. The software stretches the duration of the activity, allowing the work to be interrupted along the way. [This is the alternate setting]

Float Calculation

- ***Show Open Ends As:*** Choose “*critical*” to show open-ended activities as critical; choose “*non-critical*” if you do not want activities with open ends to be considered critical.
- ***Calculate Total Float As:*** Choose the method Primavera uses to calculate total float for all activities. “*Start float*” is the difference between the early and late start dates; “*finish float*” is the difference between the early and late finish dates; and “*most critical float*” is the least (most critical) of the start or finish floats.

Use of Data Date

Reliable calculation of schedule updates requires the use of the concept of **data date**. Some software ships with the feature turned off and require that the featured be manually activated as an option.

- The date Primavera uses as the starting point for schedule calculations. Change the data date to the current date when you record progress. [In Primavera, data date is a built-in default feature that cannot be deactivated.]

Judgment Calls during the Forensic Process

Any of the above techniques can be abused to affect discretionary decisions by the forensic analyst to influence the analysis in favor of his client. There are two instances in the forensic process that are especially sensitive to such influence because they directly affect the schedule variables at the data line. They are:

- Frequency, duration, and placement of analysis Intervals; and
- Hindsight vs. blind-sight update reconstruction.

Ownership of Float

In the absence of contrary contractual language, network float is a shared commodity between the owner and the contractor. Conventional interpretation of the principle of shared float allows the use of float on a **first-come-first-serve basis**, thereby allowing the owner to delay activities on that path up to the point where float is consumed. Therefore, as a corollary, if pacing is defined as the consumption of float, *it follows that both owners and contractors are allowed to pace non-critical work.*

Project float is the time between the last schedule activity on the baseline schedule and the contractual completion date where the contractual completion date is later than the scheduled completion date. In this case, in the absence of contrary contractual language, project float is owned solely by the contractor.

Change Order Administration

Change order administration is a name given to an organized effort to eliminate unnecessary cost and time impact as a result of processing project work outside the original scope of the contract.

To think that a project or a construction contract can be executed without change orders is a fallacy unsupported by experience.

Change orders are just part of everyday business in project management environments. The important issue is to recognize their implications and set up an effective management system to take care of them. An effective administration of change orders can minimize their cost and time impact and prevent costly legal action.

Construction change orders represent modifications to the contract between the contractor and the owner. The construction contract may be adjusted to reflect design changes, clarify documents, resolve unexpected conditions at the construction site, and accommodate substitutions.

Change orders can be initiated by owner's deletion or addition of work, designer's clarification of the contract, or any other change in the scope of the work, contract time or compensation. Repeatedly, the work covered by a change order cannot wait until its negotiation is over, and there may be disagreements between the owner, contractor, and designer over responsibility for the change, all these factors make change order administration a complicated and difficult subject while at the same time justifying project management teams need for a discipline approach to achieve better results.

Sources of Changes

Every kind of construction has a pattern in the development and number of changes, but they usually arise from one of the following:

- Unanticipated site conditions; and
- Owner requested design modifications.

Simple changes, such as substitution of comparable materials, may be carried out with little or no problem, however, more complex changes as those involving substantial judgment to interpret apportioned costs, and assess the impact on project schedules, are more common.

Change orders may get extremely complicated depending on the size, time of issuance, schedule progress, criticality, and concurrence with other changes.

Contractual Aspects

The contractual review of a change order involves a meticulous examination of contractor, designer, and owner compliance with the contract requirements, and the time and money negotiated as part of the change order.

Usually, legal reviews focus on satisfaction of:

- Notice requirements;
- Equity of payments versus actual costs; and
- Adjustment of project schedules.

Project management's daily attention to changes and their reasonable compensation, may find frequent disagreements over:

- The precise scope of the change;
- Equipment rental rates;
- Acceptable profit; and
- Overhead costs.

Unless these specific items have been outlined in the contract or some other standard agreement has been reached, these issues will probably persist through all the negotiations. This point must be emphasized because there are no universally adopted:

- Tables of costs;
- Definitions of change in scope; and
- Guidelines for overhead and profit reimbursement;

Besides the predictable concern over:

- Direct costs; and
- Schedule delays.

Increased legal and management attention should be given to:

- Indirect costs;
- The impact of changes on later aspects of the work;
- The indirect effect of numerous changes;

- The relationship between changes and productivity;
- The additional supervision required to handle changes; and
- Associated impacts.

Most contract provisions addressing changes provide a detailed listing of items compensable when a change occurs, and typically only the cost of schedule modification directly attributable to the change is covered.

Attention should be given to the consequential effects of a change on the project schedules, such as the effect of multiple changes on the efficiency of the labor and supervision, the disruptive effects of changes on the efficiency of the contractors and their morale, and other costs the contractor incurs but may not be able to directly link to specific changes.

Strictly speaking, other costs not directly linked to the change may not be considered compensable. However, the contractor will attempt to include the impact of all of these items in the resultant change order agreement.

The evolution of a reasonably simple change into one that has a large impact illustrates the basic elements of a simple change and how it can readily mushroom into something ponderous and nearly unmanageable as the contractor attempts to recover related but separated costs.

In most cases, the contract language is directed at the scope of the change and compensating the contractor for associated, direct costs. But, citing a breach of the contract, force majeure (an unanticipated major event), or other legal concept, the contractor may be able to substantially expand not only the scope of the change but also the compensable costs and time delays.

The most interesting development these days is the systematic use of the project network schedules along with other contract documentation such as progress reports, productivity analysis, daily and weekly meetings, correspondence, survey reports and the like to prove the impact that is not easily visualized by other means.

As-planned and actual scenarios should be compared at the time when the change order is approved. Then the actual performance schedule should be depicted before the introduction of the change order and compared to the actual situation after the change was incorporated.

Change order administration involves a practical and realistic interpretation of the contract language in light of the proposed changes in the work.

Change order administration should be an exercise of applying contract language to a relatively discrete situation. But it may be much more than that, because it involves:

- The degree of control the contractor, designer, and owner have over one another;
- How the change is being administered;
- Types of documentation that are required for its approval by both sides; and
- The ability of the parties to establish the actual scope of the change.

Contract provisions related to changes are used to guide both parties in reaching an agreement. However, owners and contractors can use the contract language in their favor.

Out of self-defense, many contractors have found the best way to ensure recovery for changes is to aggressively and promptly pursue each prospective change in the contract. This may be achieved by giving prompt notice to the owner along with documentation of all costs involved, schedule delays incurred, and the precise presentation of this information with the proposed change order.

When the contractor is well prepared and the owner is not, the contract has been turned from a document for the mutual benefit of both parties into a potential weapon used by one to exploit changes as means of gaining additional compensation.

The sponsoring of projects by multiple owners as a joint venture and large financial institutions providing money and seeking project participation may have an impact on change order approval or processing in general.

Third parties may provide some funding, but frequently also claim control over specification provisions and the review of change orders. In principle, since third parties funding is involved, they wish to ensure the project scope is maintained despite the occurrence of change orders, and to ensure change orders are reasonable.

Similar restrictions on the contract language used and requirements on the prior approval or right-to-review change orders may be exercised by each of the partners in commercial joint venture projects and the funding organizations.

With projects having multiple sources of finance or control, there are several common forms of distortion in the change order process. "Prior Approval" may be required before the work proceeds, actual funding may be delayed until after all participants have approved the change, and sources of finance may reserve the right not to participate in change orders even though they are within the original project scope.

Insistence on prior approval of changes has a particularly adverse effect on construction. The contractor encountering interferences in the work, changed conditions, or other obstacles must stop further work in the area until the change is acknowledged and approved. Otherwise, the funding for the change may not be approved, regardless of the actual merit of the change. This interruption of the work and restarting later invariably results in:

- Reduced labor efficiency;
- Adverse impacts on the project schedule; and
- Greater costs.

Reservation of rights to participate in the change order or to approve the change much later can also have a severe impact. Some Project managers, fearful of an arbitrary or restrictive review of change orders by funding agencies, deliberately deny reasonable requests for change orders in a ploy to either hide the costs or to appear as a rigorous enforcer of the contract.

Change Orders Elements

There are at least six key elements in the successful administration of changes during construction; they are:

- The contract approved schedule revised on the day the change was approved;
- The approved progress reports;
- The full scope of the change identified and understood;
- The detailed records of all related aspects;
- Information to all affected parties, and assessment of their role in the change; and
- The evaluation of alternative strategies available for minimizing the impact of the change.

Change Order Strategy

Establishing the Scope of the Change

When starting the design or construction phase of a project, a great deal of effort is invested in carefully defining the scope of work and its associated costs. A particular effort is made to minimize and control ambiguous details which will affect costs, quality, and schedules. Even with the most schematic of construction drawings, the designer will prescribe basic dimension, materials, and key characteristics of the work.

By contrast, with changes, the scope is often narrowly and poorly defined, and estimates of the associated cost and schedule impact are considered approximate at best. In effect, the contractor, designer, and owner may agree that something must be done, but may not agree on its full description and its associated costs.

In principle, when assessing whether or not a change exists we compare characteristics of the alleged change with the contract requirements, and based on this review agree on the existence of a change. A great deal of attention is given to the specific contract wording and its reasonable interpretation.

It is not enough, however, to simply acknowledge that a change exists according to the contract language; it is also essential to define its scope and impact on the actual project. But it is difficult to assess the full impact of the change or there is simply no time to fully understand it.

When establishing the scope for a change, look beyond the simple contract wording and consider the potential impacts of the change on other areas of the project construction and operation, events which may ease or worsen the effects of the change, and any consequential cost and schedule impacts which may be incurred.

This is not to say that we will set aside the contract or ignore its provisions, but indirect or consequential issues associated with the change may have a large effect on its eventual cost and schedule impact.

Even if the direct impact of a specific change can be readily established, its indirect effects can be much harder to assess. The following checklist is a guideline for change orders scope recognition.

- Evaluate the full scope of change;
- Evaluate the full impact of change on related work;
- Evaluate the schedule impact locally and overall;
- Analyze daily and weekly meeting minutes;
- Evaluate progress reports;
- Establish productivity profiles;
- Visit the site;
- Take photographs; and
- Establish cost estimate.

Maintaining Detailed Records

If full credit is to be granted for the change, legal precedent and good practice requires all related issues to be thoroughly documented, from initial notice of the change through its final impact on the project cost and schedule.

Unfortunately, lack of time on the construction project makes the development and maintenance of detailed records difficult. Furthermore, contractors, engineers, and architects often resist exact record keeping on the grounds that outsiders interpretation may be inaccurate.

Several approaches have been used to help develop good records some of them:

- Isolating the schedule portion affected by the change, impacting it with the change and incorporating it back to the overall schedule for further identification of impacts;
- Maintaining a verbal commentary while filming the work with a video camera;
- Requiring the contractor to hire a professional photographer to maintain a detailed photo log of the work; and
- Using a professional court recorder to transcribe the minutes of all periodic meeting among contractor, designer, and owner.

Contract administrators, contractor personnel, and legal staff from both sides may then work with these records to establish the impact and relative responsibility for each aspect of the changes. Records may be used to develop background for future projects.

If there is a more serious administrative or legal dispute over a single change or the impact of multiple changes, the maintenance of detailed, clear records will not only substantially increase the probabilities of a fair settlement, but decrease the associated legal and administrative costs.

Establishing Proper Processing Time

In the simplest of cases, the representatives of the contractor and owner negotiate and reach a direct agreement on the change immediately after it has been identified. Agreement may be reached without having to receive approval from other outside parties.

In practice, there is usually a point where other parties must be consulted and their approvals received, and inordinate amount of time is often spent documenting, explaining, and justifying the existence of the change. The key point here is that the time required to respond to a change is often much longer than any party might reasonably expect or want.

Because many change orders are requested by the contractor, and certainly much of the documentation must originate with the contractor, it is often tempting to say that delays in the change order processing are attributable to contractor delay and inaction. Consequently, many owners and designers attach a lower schedule and financial priority to change orders than to other aspects of their work.

Contractors often contribute to delays in change order processing by delaying their request for a change until all of their costs are known, or until later in the project when the impact of changes is clearer.

In many respects, though, their delay is exacerbated by contract notice requirements, the contractor must notify the owner of any potential change as soon as it occurs or lose the opportunity to recover later. Therefore, the contractor files a notice with all potential changes, when in fact most are not realized and many are not documented until well after the initial filing.

Then, given this large time gap between initial notice and actual request for compensation, it appears that protracted delays in change order processing is a natural and relatively benign development. In fact, this is not the case. From experience, the more rapidly owner and designers respond to potential and claimed changes in the work, the lower the direct and indirect costs the owner will incur.

Keep in mind that delaying change orders processing until the end of the project increases the probabilities of the contractor recovering claims and net owner administrative costs. Deferring resolution of change orders until the end of the project allows the contractor an opportunity to identify more costs associated with the change and more complete records.

It is a well known fact that after-the-fact data analysis by the contractor brings substantial increase on constructive change orders claims. Many good reasons are given for not pursuing the prompt resolution of change orders. But it is important to recognize that the net costs will be lower for all with more expeditious handling of their identification and processing.

Establishing a plan of action

Change orders must be treated as small contracts within the contract. As such, they must have their own:

- Budget;
- Working approved schedule;
- Manpower crew loading;
- Other resources allocation;
- Progress measure system; and
- Analysis and evaluation frequency.

Parallels may be drawn between the administration of a change and that of a simple project. In either case, good management requires us to establish a goal or objective, to organize the people involved, and then to monitor the work as it progresses.

But no matter how small, effective administration of changes often requires greater management skill, for here we are not only responding to a new task or objective, but we must also deal with a whole universe of related, evolving tasks making up the original project.

In spite of the importance of good project scheduling, few contractors and owners develop and maintain strong schedules for the project as a whole. Reasons vary, but most often it is because lack of time to develop and update it, and lack of the technical background needed for more sophisticated systems.

It is seeing, however, a great deal of interest in the use of microcomputer-based systems, where the project personnel may use simple software systems to plan their work over the next two to three weeks. These commercial systems allow personnel to easily enter critical activities and to better examine alternate strategies for completing the work.

This ability to use a sophisticated, but user friendly system to evaluate alternate sequences, equipment, and personnel for a particular task results in more effective planning of the work. When field personnel have control over the schedule development system and when they may use it as a planning tool to evaluate alternatives, they get more involved and become very effective in planning and monitoring the impact of changes.

The use of schedule and work planning systems at the project site, operated independently from remote main-office computers, should be encouraged.

The Construction Schedule

As with almost every other aspect of the relationship between owner and contractor, scheduling must be established in the contract. If a construction contract contains no schedule or no completion date, courts will infer that a “reasonable time” is allowed for the contractor to complete the project. Needless to say, few project owners are willing to trust the fate of their project to such an amorphous standard of performance.

The Contractual Schedule

Most construction contracts contain the statement that “Time is of the essence. To understand the purpose of this statement, it is necessary to recall the distinction between material and immaterial breach of contract discussed in previous discussions.

By stating that time is essential, the owner is putting the contractor on notice that a failure to meet the completion requirements will be a material breach of contract which would justify a default termination of the contract. As a practical matter, an owner would be on shaky ground if it kicked a contractor off a job simply because the contractor was a few days behind the established progress schedule.

However, if the owner could show that the contractor has no reasonable chance of completing the project on time, a default termination would be upheld.

Establishing a completion schedule is quite simple. Sometimes the owner simply states the date by which the work must be completed. The preferred method, however, is to state the number of calendar days the contractor will be allowed for performance of the work. This method is superior because it allows for greater flexibility and specificity when it becomes necessary to make adjustments in the completion date. These matters will be discussed later in this chapter.

If a contractor is allowed a certain period of time to perform the work, for instance, 420 calendar days, it is obviously necessary to establish when the period starts to run. Some construction contracts state that the performance period starts to run on the date of the contract itself.

Frequently, however, the contractor is not authorized to begin work immediately upon contract signing. Problems with site access or project financing may force the contractor to wait weeks before actually beginning work.

It is common for contracts to state that the contractor will receive a “notice to proceed” within 30 or 60 days of contract execution and the contractor must commence work within 5 days of receipt of that notice. When a contract is structured in this manner, it usually states that the contractor’s performance period starts to run upon the owner’s issuance of the notice to proceed.

Construction contracts should also establish how the date of completion will be established. Considering the financial consequences of late completion, this should not be determined on an ad hoc basis.

The most prevalent and appropriate benchmark for a contractor’s completion of the work is “substantial completion.” Substantial completion is achieved when the project is sufficiently complete so that the owner can take occupancy and put the structure to use for its intended purpose.

There may be a large number of remaining “punch list” items which the contractor is contractually obligated to complete, but if the contractor achieves substantial completion within the stated number of calendar days, it has met its completion obligation.

The fact that certain finish work needs to be touched up or certain hardware is missing should not enable the project owner to levy harsh financial penalties against the contractor. The owner received that which it bargained for. It is occupying and making productive use of the project within the stipulated period of time.

Sometimes construction contracts will state that the contractor must achieve “final completion” of the project within the stipulated number of calendar days. This means that all the punch list must be completed and the owner must formally accept the project and release final payment.

This arrangement is quite unfair to contractors. As will be seen in the final chapter on project closeout, a great deal must be done between substantial completion and final completion and acceptance of the project. Many of these matters are beyond the control of the contractor.

Why should the contractor be held financially responsible, for instance, by way of liquidated damages, for this period of time, particularly when the owner has the beneficial use of the project? For this reason, courts prefer to interpret “completion” of the project to mean substantial completion.

If a contract explicitly requires final completion and acceptance within the stated number of calendar days, however, this requirement will be enforced.

The Contractor's Construction Schedule

Considering the complexity and extent of a typical construction project, it is apparent that a great deal of planning and scheduling is required. A detailed examination of scheduling techniques is beyond the scope of this book, but a basic understanding is useful.

Until recent years, most construction scheduling was performed using simple, manually prepared bar charts. Each bar represented a particular activity and indicated when it must commence and when it must be completed.

These milestones are usually expressed as the number of elapsed calendar days of work on the project. The timely commencement of follow-on activities would of course be contingent upon the timely completion of the earlier ones.

Some bar charts are quite crude, breaking the activities down only according to trade. Some are quite elaborate, however, with separate bars for virtually every identifiable activity.

In recent years, the use of bar charts has been largely replaced by the use of computerized “critical path method” (CPM) schedules. These schedules are based on the same concept as a bar chart, but the activities are tracked on a computer-generated network drawing. CPM schedules tend to break the activities down with far greater specificity than even the most elaborate bar chart, thereby giving contractors greater ability to monitor their progress and properly coordinate the various activities.

The term “critical path” refers to that sequence, or path, of activities which is critical to the timely completion of the project. For some activities, the scheduling constraints are not severe, as little or no follow-on work is dependent upon their timely completion. Other activities, such as the pouring of the foundation, are sure to be on the critical path.

The fact that CPM schedules are computerized adds greatly to their usefulness. It is common for contractors to generate an “as-planned” CPM schedule prior to starting work. As work progresses, an “as-built” schedule is maintained. This enables the contractor to carefully monitor its own progress. As will be seen later in this chapter, it also provides a powerful tool for documenting the extent of various delays, their effect on the critical path, and their effect on the actual completion of the project.

Traditionally speaking, progress schedules have been prepared by contractors strictly for their own use. The attitude of contractor and owner alike was that the contractor was responsible for the proper scheduling and coordination of its work. As long as it met the completion date, this scheduling was no one else's business. In recent years, however, project owners have insisted on getting into the act. It is now common for contracts to require that the contractor submit a proposed progress schedule to the owner within so many days of contract execution. This schedule is to be reviewed and formally approved by the owner. Adherence to this schedule is a requirement of the contract.

Project owners feel that by reviewing and approving a contractor's schedule, they will gain more control over the contractor and be in a better position to hold the contractor accountable for its progress or lack thereof. From a managerial standpoint, this is probably true. From a legal standpoint, however, this is a dubious proposition.

As mentioned earlier in this chapter, an owner will not be able to terminate a contract for default simply because a contractor has fallen behind its approved schedule. The owner must be able to prove that the contractor was so far behind schedule that it had no reasonable chance to complete the project on time. In the absence of that showing, the owner must give the contractor an opportunity to pick up its pace and complete the work on schedule.

The owner's formal approval of a contractor's progress schedule is also a double-edged sword which can come back to harm the owner. On any construction project, the owner has certain obligations that must be met in a timely manner. The site must be accessible. Decisions and approvals must be made. The work of separate contractors must be properly coordinated. If the owner fails to carry out its responsibilities in a timely fashion, it may very well be held liable to the contractor for delay damages.

By formally approving the contractor's progress schedule submittal and making it a part of the contract, the owner has gained a slightly higher degree of leverage with the contractor. It has also made a contractual representation that it will carry out its responsibilities in a manner which will enable the contractor to meet the approved schedule. If the owner fails to do so and the contractor's performance is delayed as a result, the approved progress schedule will be Exhibit I in the contractor's delay claim against the owner.

Categorizing Delays

Before examining the relationship between owner and contractor regarding delay, it is useful to discuss the three basic categories of delay. All construction delay can be characterized as excusable, non-excusable, or compensable.

Excusable delay is delay which occurrence is due to factors beyond the control and without the fault of either party. Bad weather is the most common example. Generally speaking, excusable delay will entitle the contractor to an extension of the performance period, but no additional compensation.

Non-excusable delay occurs as the result of the contractor's failure to meet its contractual obligations. For instance, material was not procured on time or insufficient labor was furnished.

*CASE STUDY*²

The contract allowed Contractor 290 days to complete construction of a fire station. Some of the drawings furnished by Owner proved to be defective. This delayed the Contractor's performance of the work.

Owner became dissatisfied with the pace of Contractor's progress and terminated the contract for default. Contractor contested the termination.

Contractor's delays were beyond its control and therefore excusable. Owner was obligated to extend the performance period to compensate for the delay. If the proper extensions had been granted, Contractor's progress would have been satisfactory.

Therefore, the default termination was reversed.

If a non-excusable delay results in the contractor's failure to complete the contract within the stipulated number of days, the contractor will be held financially responsible to the project owner for the delay.

Compensable delay is a delay caused by the owner's failure to meet its obligations. For instance, the owner failed to provide timely access to the site or failed to review shop drawings within the contractually allowed period. Generally speaking, compensable delay entitles the contractor to an extension of the performance period and an increase in the contract price to compensate it for the increased costs caused by the owner's delay.

² Chaney Building Co. v. City of Tucson, 716 P.2d 28 (Ariz. 1986).

Sometimes, two separate causes of delay occur concurrently. If an excusable or compensable delay occurs concurrently with a non-excusable delay, the contractor will not be entitled to a time extension or increased compensation for the period of non-excusable delay. The rationale is that the contractor would have been delayed anyway because of its own shortcomings.

Similarly, if an excusable delay occurs concurrently with a compensable delay, the contractor will be entitled to a time extension, but no compensation, for the period of excusable delay. After all, the contractor would have been unable to work notwithstanding the owner's shortcomings.

To understand the concept of concurrent delay, consider these illustrations:

The owner denies timely site access to the contractor. Ten days later, unusually severe rain begins to fall. Ten days after commencement of the rain, the rain stops and the owner provides site access. The first 10 days of delay would be compensable. The next 10 days of concurrent delay would entitle the contractor to an extension of time for the excusable delay but would not be compensable.

The contractor is unable to obtain a piece of equipment necessary to perform the excavation. The owner, however, has not provided access to the site. The occurrence of the non-excusable delay cancels the effect of the owner's compensable delay. The contractor would not be entitled to a time extension or additional money.

CASE STUDY³

Contract called for construction of an air traffic control tower. Inadequate Government specifications for fasteners resulted in problems with installing masonry panels. Work was halted.

As soon as work stopped, serious deficiencies in the workmanship of Contractor's masonry subcontractor were discovered. These problems were corrected while Government resolved the problems with its specifications. Contractor later brought a claim alleging that the entire period of delay was compensable.

The U.S. Claims Court ruled that the delay was initially compensable because it was the fault of Government. As soon as the deficient workmanship was discovered, however, the compensable delay became concurrent with a non-excusable, contractor-caused delay. Contractor was not entitled to any additional compensation for the period of concurrent delay.

The contractor fails to obtain the necessary piece of equipment, and no work takes place for 10 days. Unusual severe rain then begins to fall and continues for 10 days. By the time the rain stops, the contractor has obtained the equipment and is ready to start work. The first 10 days of delay are non-excusable, and to the extent this delay causes late completion, the contractor will be liable to the owner.

³ Toombs & Co., Inc. v. United States, 4 Cl.Ct. 535 (1994).

The contractor will not be responsible for the next 10-day period of concurrent delay, however. The excusable delay negates the effect of the contractor's shortcomings, as the contractor would not have been able to work anyway. The contractor will not be entitled to an extension of time for any period when it did not have the equipment available, however, as it would have been delayed notwithstanding the rain.

Contractor's Entitlement to Extension of Time

It is important to emphasize that a contractor's entitlement to an extension of time is dependent on the terms of the contract. If the contract does not expressly authorize time extensions, the owner will be in a position to argue that the contractor is obligated to complete the project on schedule regardless of any occurrences. The owner will not necessarily prevail in this argument, as courts sometimes recognize that an act of God will excuse nonperformance of a contract. But the door will be open for the owner to make the argument.

The contractor's entitlement to an extension of time is usually dependent on the definition of excusable delay; so the examination of this issue must begin there.

Excusable Delay

As stated earlier in this chapter, excusable delay results from occurrences beyond the control and without the fault of either owner or contractor. Most construction contracts spell out occurrences entitling the contractor to an extension of time. This is seldom labeled "excusable delay," but the fact the contractor is allowed additional performance time indicates that the delay was recognized as being beyond the contractor's control.

In the absence of a contract clause authorizing extensions of time, there will be great confusion as to what, if any, events will justify an extension of time. Courts would probably excuse the delay only in the face of catastrophic natural disasters. A time extension clause is therefore crucial from a contractor's point of view.

Weather, of course, is the most common cause of excusable delay. It is also the most misunderstood.

In order for adverse weather to be an excusable delay, it must be so severe or unusual that it could not have been reasonably anticipated. When bidding and scheduling their jobs, contractors are expected to anticipate bad weather. It would be foolish, and certainly not beyond the control of the contractor, to price and schedule work on the assumption that every day will be warm and dry.

Normal seasonal and geographic factors must be considered. A week of rain in April might be “adverse,” but in most locations, spring rain should be anticipated.

To prove entitlement to a time extension, contractors must rely on the weather records for the locale of the project. The weather occurrences for the period in question must be compared with the historical weather data for that time of year. Ultimately, it comes down to the inherently subjective judgment call as to whether or not the weather conditions were so severe or unusual for that location at that time of year that the contractor could not have reasonably anticipated their occurrence.

Another misunderstood cause of excusable delay is acts of governmental authorities. Again, the key is foreseeability. If a contractor knows it is required to get certain permits from public authorities, it must anticipate that a certain lead time will be required. Delay in obtaining these permits will usually not be excusable. The delay will be excusable only if the contractor was without fault and the nature or extent of the delay could not have been anticipated. A classic example would be when an environmental organization files suit and obtains an injunction shutting down the project.

Notice Requirements

Most contract clauses authorizing extensions of time for excusable delays require the contractor give the owner prompt notice of the delay. For instance, AIA Document A201 requires the contractor to make a claim in writing within 20 days of the commencement the delay or the right to a time extension will be waived. Many contracts require written notice within a much shorter period of time.

The question arises, does the contractor’s failure to give the owner timely written notice actually result in a waiver of the right to a time extension? The answer is, it depends on whether or not the owner was prejudiced by the lack of written notice.

If the owner was aware of the delay, it is hard to see how the lack of a written notice would affect the owner’s options or decisions. This is frequently the case, as an owner’s representative usually visits the site regularly and would be aware of a work stoppage.

Even if the owner was unaware of the delay, the lack of written notice may not prejudice the owner’s interests, particularly if the delay is caused by bad weather. Even if the owner had been given notice, what could it have done?

In order for the failure to give written notice to operate as a waiver of the right-to-an extension of time, the owner must be able to show that had it been given notice, it would have taken certain actions to mitigate the problem. Then, the lack of notice did adversely and irrevocably affect the owner’s interests. In this situation, courts will enforce the written notice requirement against contractors.

Effect of a Time Extension

The effect of a time extension is quite simple. The contractor is allowed to complete the project at a later date without incurring financial liability to the owner. As will be discussed later in this chapter, most contracts call for liquidated damages to be assessed against the contractor for every day the project remains incomplete after the stipulated completion date. A time extension enables the contractor to avoid liquidated damages for that period of delay attributable to excusable causes.



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Planning & Scheduling Excellence Guide (PASEG)

Purpose & Scope

Description

This guide provides the program management team, including new and experienced master planner/schedulers, with practical approaches for building, using, and maintaining an Integrated Master Schedule (IMS). It also identifies knowledge, awareness, and processes that enable the user to achieve reasonable consistency and a standardized approach to project planning, scheduling and analysis.

Sound schedules merge cost and technical data to influence program management decisions and actions. Realistic schedules help stakeholders make key go-ahead decisions, track and assess past performance, and predict future performance and costs. Industry and Government agree that improving schedule integrity has a multiplier effect on improved program management.

Program teams can benefit from this guide to gain a common understanding of key scheduling terms, concepts, and practices. The guide also provides practical tips and caveats for scheduling techniques that apply for any scheduling software tool or environment.

Using this guide, the program team can build and maintain more robust and dynamic schedules that provide a roadmap for improved program execution.

By capturing the extensive knowledge of experienced Government and Industry professionals, this guide provides how-to direction or instruction. This document aims to translate earned value or scheduling policy and guidance into practical approaches for improving scheduling capabilities and outputs across Government and Industry.

Though written primarily for the DOD/Intel community, this guide provides scheduling practices or techniques that apply to any industry. Still, the primary focus is on scheduling for large programs with high technical, schedule, and cost risks. These programs stand to gain the most return on investment when all stakeholders dedicate the proper skills, resources, and time to developing and maintaining excellent schedules that pay high dividends for all parties.

The guide is divided into 13 major sections and appendices outlined in the table below:

PASEG Major Section	Description
1. Purpose & Scope	General overview of the IMS Guide purpose and scope.
2. GASP	The Generally Accepted Scheduling Principles (GASP) are eight over-arching tenets for building, maintaining, and using schedules as effective management tools.
3. Leadership, Buy-In, Commitment	Includes Managing Using the IMS, The IMS is a Tool not a Report, Integration of Management Tools, and Roles and Responsibilities of Program Personnel.
4. Schedule Architecture	Explains IMS Architecture, Schedule Hierarchy and Top Down vs Bottom Up planning.
5. Standard Modelling Techniques	In depth exploration of schedule task naming conventions, duration, relationships/logic, lead/lag, constraints, milestones, summaries & hammers, level of effort, apportioned effort, and working calendars. Additionally, explains the schedule calculation algorithm and options for modelling scheduling margin.
6. Cost & Schedule Integration	Covers resource loaded and non-resource loaded schedules.
7. External Schedule Integration	Describes methods of incorporating external schedule information in the IMS including an overview of Subproject/External Schedule Integration, Interface Handoff Milestones and Schedule Visibility Tasks.

PASEG Major Section	Description
8. Horizontal & Vertical Traceability	Defines and provides methods of maintaining vertical and horizontal traceability and an overview of task coding.
9. Schedule Maintenance	Discusses status updates, including status updating to Time now, forecasting, and estimates at complete (EAC). Covers baseline maintenance, including the baseline change management process and the rolling wave process.
10. Schedule Analysis	Covers schedule health assessments, Critical & Driving path analysis, Schedule Risk Assessment (SRA) Set-Up & Execution, SRA Analysis, and incorporating Risk & Opportunities in the IMS. Addresses schedule execution metrics, including Critical Path Length Index (CPLI), Baseline Execution Index (BEI), Schedule Performance Index (SPI), Duration Based vs. Scope Based % Complete, Schedule Rate Chart, and Current Execution Index (CEI).
11. Business Rhythm & Submittal	Includes IMS related documentation recommendations in IMS Supplemental Guidance and Desktop Procedures in addition to considerations for Program Schedule Reviews, IMS Submittal, and the IMS related program Business Rhythm.
12. Training	Covers recommended content for IMS related leadership and planner/schedule skills and training.
13. Program / Contract Phase Considerations	Describes various IMS attributes by program / contract phase (e.g. Technology Demonstration and Engineering, Manufacturing Development) and an in-depth explanation of Scheduling in a Production Environment.
Appendices	Includes the following four appendices: Terms & Definitions, References, GASP to PASEG Roadmap, & Credits & Acknowledgements

Each section listed in the Table of Contents contains more detailed chapter, each with a standard format described below.

With few exceptions, each chapter in the guide contains eight headings to enhance ease of use, navigation, and readability. Depending on the reader's role or purpose when using the guide, the Chapter headings will help focus the reader on key points, tips, options, pros and cons, and references to other sections or chapters in this guide. The next table summarizes these chapter headings and when and how to use them.

PASEG Chapter Heading	When & How to Use It
Manager's View	Executives, program managers, & others can quickly find why this topic matters to managers. Describes how the concept or approach might impact schedule validity, decision-making capability, or other management values.
Description	More detailed description or discussion on the topic. Scheduling professionals, analysts, or the program team can find details—sometimes quite technical—on how & when to use this approach.
Example	As applicable, includes screenshots, tables, charts, or other depictions to clarify or enhance the discussion or to illustrate the technique or approach.
Calculations	When the topic impacts how scheduling tools calculate or process data, this section describes the key points. This is particularly important for scheduling professionals who seek to understand how & why certain techniques or functions might impact total float, durations, critical path, or impacts from other scheduling tool calculations.
Optional Techniques	Where appropriate, describes one or more alternative approaches that a program team might use, considering degree of difficulty, risk, & caveats.
Things to Promote	Whenever possible, this section will highlight processes or steps to follow to promote improved scheduling processes, information, or usefulness.
Things to Avoid	If applicable, lists techniques or processes to avoid, minimize, or mitigate, expressing the caveats, warnings, or potential pitfalls.
Related Topics	As applicable, lists the top three (sometimes more) related major sections or topics within this guide.

Recommendations for Use

Use this guide as a reference. In the scheduling arena, each organization or program might assess a topic and make minor adjustments to the approach with the primary aim of generating useful schedule data that helps to better inform management to aid in making decisions and taking actions.

Try different approaches when the likely result is better, timelier, or more accurate management information. Share the approach for subsequent versions of this document. Use the Generally Accepted Scheduling Principles, GASP, to arbitrate contentious techniques. The guide is only useful if used with positive intent to produce improved schedules. Organizations and program teams must exercise judgment and follow practices that make sense for their programs and that result in improved program management information and decision-making.

Approaches should only be implemented if they are sustainable, given the organization or program complexity or the program team skills, experience, and capabilities. Use techniques that are realistic for the program team to implement and maintain while minimizing management process risks.

Since this guide should only be used as a reference, it is recommended that each program develops an IMS Supplemental Guidance that clarifies and specifies the uniqueness of the program approach (architecture, ground rules and assumptions, specific methodologies used for generating or analyzing the critical path, the business rhythm for updating the schedule, data dictionary, nomenclature, etc.). Refer to the IMS Supplemental Guidance chapter in the PASEG for additional details.

The guide is only useful if used with positive intent to produce improved schedules. Organizations and program teams should exercise judgment and follow practices that make sense for their programs and that result in improved program management information and decision-making that are in alignment with their company approved System Description or management procedures (as applicable). In particular, the sections in the Guide titled “Things to Promote” and “Things to Avoid” are recommended actions intended to promote better planning practices and improve planning products and uses.

Consider that this guide was written by many authors who have a stake in improving scheduling capabilities and competencies, as well as program technical, cost, and schedule performance. If a technique truly seems incorrect or unsound, provide adequate feedback to enable improving the topic write-up in a subsequent version of the guide.

Get a copy of the PASEG book using the link shown below:

<https://www.dropbox.com/s/941h0j3jehgz2nc/PASEG.pdf>

Generally Accepted Scheduling Principles (GASP)

The Generally Accepted Scheduling Principles (GASP) are eight over-arching tenets for building, maintaining, and using schedules as effective management tools.

The GASP is concise and easily understood, yet set high expectations for program management teams to develop and use schedules.

The first five GASP tenets describe the requisite qualities of a valid schedule; that is, one that provides complete, reasonable, and credible information based on realistic logic, durations, and dates. The latter three GASP tenets reflect increased scheduling maturity that yields an effective schedule.

An effective schedule provides timely and reliable data, aligns time-phased resources, and is built and maintained using controlled and repeatable processes.

The GASP serves several purposes. First, they are high level tenets, or targets, for sound scheduling. The GASP also serves as a validation tool for the program team or organization to assess schedule maturity or schedule areas needing improvement. Lastly, the GASP can be used as a governance tool to assess new or different scheduling approaches with objectivity and detachment.

Achieving a GASP-compliant schedule indicates the schedule is not merely healthy, but fit. A healthy schedule is functional and meets minimum management purposes, but a fit schedule is robust and dynamic.

A fit schedule provides the program team with a program execution roadmap of meaningful progress and realistic forecasts against a resource-loaded performance measurement baseline. Thus, meeting all eight GASP tenets demonstrates that the program team builds and maintains the schedule with rigor and discipline so that the IMS remains a meaningful management tool from program start through completion.

Generally Accepted Scheduling Principles			GASP Narrative	GASP Essential Statement
Valid	1	Complete	Schedules represent all authorized effort for the entire contract, with essential subcontracted or other external work or milestones integrated yet distinguishable from internal work. Level of Effort may be excluded from the IMS.	The schedule captures the entire discrete, authorized project effort from start through completion.
	2	Traceable	Schedules reflect realistic and meaningful network logic that horizontally and vertically integrates the likely sequence for program execution. Schedules are coded to relate tasks or milestones to source or dependent documents, tools, and responsible organizations.	The schedule logic is horizontally & vertically integrated with cross-references to key documents & tools.
	3	Transparent	Schedules provide full disclosure of program status and forecast and include documented ground rules, assumptions, and methods for building and maintaining schedules. Documentation includes steps for analyzing the critical paths, incorporating risks and opportunities, and generating schedule health and performance metrics.	The schedule provides visibility to assure it is complete, traceable, has documented assumptions, & provides full disclosure of program status & forecast.
	4	Statused	Schedules reflect consistent and regular updates of completed work, interim progress, achievable remaining durations relative to the status date, and accurately maintained logic relationships.	The schedule has accurate progress through the status date.
	5	Predictive	Schedules accurately forecast the most likely completion dates and impacts to the program baseline plan through valid network logic and achievable task durations from the status date through program completion.	The schedule provides meaningful critical paths & accurate forecasts for remaining work through program completion.

Generally Accepted Scheduling Principles			GASP Narrative	GASP Essential Statement
Effective	6	Usable	Schedules produce meaningful metrics for timely and effective communication and tracking and improving performance, mitigating issues and risks, and capturing opportunities. Schedules are robust and functional to help stakeholders manage different levels, groupings, or areas as needed. Schedules are developed and maintained at a size, level, and complexity such that they are timely and enable effective decision-making.	The schedule is an indispensable tool for timely & effective management decisions & actions.
	7	Resourced	Resources align with the schedule baseline and forecast to enable stakeholders to view and assess the time-phased labor and other costs required to achieve project baseline and forecast targets. Each program is unique and uses varying techniques to load, baseline, and maintain the time-phased resources at levels that are practical and produce meaningful and accurate projections. When resource-loaded schedules are used they enable flexible updates to resource requirements as conditions change. Whether or not resource-loaded schedules are used, cost and schedule data are integrated for internal and external reporting.	The schedule aligns with actual & projected resource availability.
	8	Controlled	Schedules are baselined and maintained using a rigorous, stable, repeatable, and documented process. Schedule additions, deletions, and updates conform to this process and result in valid and accurate results for sound schedule configuration control and maintenance.	The schedule is built, baselined, & maintained using a stable, repeatable, & documented process.

Unconventional Project Management

Unconventional project management is a shift in thinking about projects and how to succeed. It is to think out of the box.

Unconventional project management is project owner focus and change friendly. These require a new approach to traditional Newtonian project management. We require what Douglas De Carlo⁴ refers as a quantum mindset as it will be explained in this paper.

In the Newtonian, mechanistic world, we believe the plan is a prediction and things should be well-organized and disciplined. A Newtonian mindset thinks: use templates, fragments, forms, etc...assuming project activities are going to follow a forecast pattern.

In the Quantum world (chaotic one) we live in, we must understand change as the norm and plans change weekly, if not daily. We plan, deplane, re-plan and plan again. A quantum mindset accepts reality as being chaotic and looks always for ways to overcome this chaos.

Why do we need an unconventional practice of Project Management?

The world of projects has changed, but project management hasn't kept up with it. Traditional or waterfall project management works well under conditions of low speed, low change and high predictability.

How many projects do you work on that fit that description?

New business and their critical economy and timing for implementation have become an essential part of the success equation difficult to solve by available means. They are generating what Douglas calls extreme projects characterized by high tech, high speed, high change, high complexity, high unpredictability and high stress. And they usually live under turbulent business conditions.

All these conditions also make these projects organizationally complex as they typically cut across multiple layers of management making them politically sensitive.

On an unconventional, extreme project, the desired result, what the customer really needs, is discovered throughout its implementation life. To complicate matters even more, the path to achieve the desired result also evolves as the project team moves forward through a jungle of reality shows.

If we are to succeed, we should plan, deplane, re-plan and plan again on daily, weekly and monthly basis. It means that project managers have to gain and sustain commitment among conflicting execution, procurement, logistic and political interests.

¹ Extreme Project Management Book, 2004

They need to be agile and adaptive and provide customers with value early and often, while keeping their own lives intact during the process.

By comparison, traditional projects are pushovers. The project goal is much more stable, the path to get there is clearer, change is kept to a minimum, the politics are less intensive and the customer may wait months before seeing anything useful. Here, planning follows the classic model of cut and paste from previous experiences.

The rules, tools and mechanic Newtonian practices that work on traditional projects backfire on extreme projects where uncertainty, improvisation and spontaneity replace predictability, command and control.

Extreme projects require a new mindset, a new project management model and a new breed of project manager.

What Is The Quantum Mindset?

The Quantum mindset is based on the assumption that change is the standard.

The Newtonian mindset is based on the assumption that stability is the standard.

Because these two worldviews represent diametrically opposite assumptions, they give rise to two different belief systems and behaviors for how projects should be managed.

What is your Belief System?

Your belief system represents your view of how the world works.

Newtonian Mindset	Quantum Mindset
Stability is the norm	Chaos is the norm
The world is linear and waterfall-like	The world is intricate and spider web-like
A good plan is a prediction	Uncertainty reigns; we can't predict
Minimize change	Welcome change
Increase the feeling of security by adding rigor to the process	Increase the feeling of security by loosening up the process

Your management style reflects how your belief system translates into how you do your job.

As a project manager running a project (or if you are a project customer, sponsor or senior manager), which of the two hats do you wear most of the time?

Newtonian Hat	Quantum Hat
Deliver as planned regardless	Discover the desired result
Use the plan to drive results	Use results to drive planning
Run stronger procedures and policies	Agree on guidelines, principles and values according to project needs
Keep tight control on the process	Keep the control process loose
Correct to the original baseline	Correct to what's possible
Be a task master	Be a relationship manager
Get it right by the book	Get it right the whenever possible

If you are wearing a Newtonian hat and using a Newtonian compass to navigate your way through a Quantum world, you are likely to feel frustrated and under stress most of the time.

You will be suffering from Newtonian Neurosis. You will not be at ease. You will suffer because your actions are in conflict with reality.

Towards peaceful co-existence with technological advances

This is not to say that there is no place for the rigor of traditional or Newtonian principles on an unconventional project. There are parts of projects that absolutely require rigor such as software testing procedures or the execution of a scientific testing. Both the Newtonian and Quantum worldviews are necessary.

But to succeed on today's environment, the venture is far better served when the predominant mindset is Quantum. This means that you need to use both the left and right side of the brain, but know when to use each.

Twenty first century's projects are primarily Quantum, right brain undertakings. You can think of it this way. Your right hand may be your dominant hand. But that doesn't mean you tie your left hand behind your back.

What Is Extreme Project Management?

*An extreme project is a complex, high-speed, self-correcting venture in search of a desirable result under conditions of high uncertainty, high change and high stress.*⁵

Project management for these projects should be different and unconventional to facilitate and administer the flow of thoughts, emotions and interactions in a way that produces valued outcomes under chaotic conditions.

An unconventional or extreme project is like trying to change the tire on a car that is going at 70 miles an hour when the driver has been drinking heavily.

Bottom line: If you are a project manager, you need to think of yourself as a facilitator of disorder.

The extreme project model is a change-tolerant model that provides value early and often to the project's customer. It enables project managers:

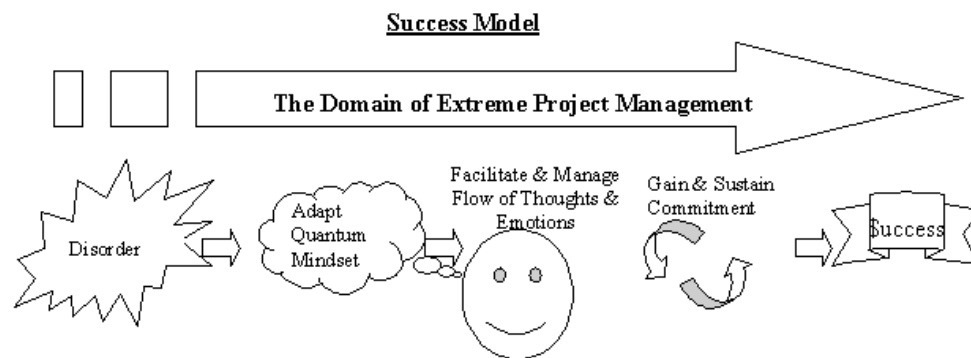
- To meet ever changing customer requirements;
- To stay in control in the face of volatility; and
- To maintain a balance of work and personal life.

In other words, the extreme model is not merely another methodology and flowchart. It's much more. It's a holistic framework that's built on a set of principles, shared values and practices that accelerate performance on *all three levels* necessary for success:

1. Individual
2. Team
3. Organizational

⁵Douglas De Carlo

The model is people centered, humanistic, reality-based and business-focused.



How Is Success Measured on an unconventional, extreme Project?

Since extreme project management is people- and customer-centered, it will come as no surprise that success is measured as follows:

- Customers are happy with progress and interim deliverables;
- Customers are happy with the final deliverable;
- The down stream (post project) benefits are realized; and
- Team members enjoy a satisfactory quality of life throughout the project.

A short cut way of saying this is that customers receive value throughout the whole life of the project and the project team feels good about the experience.

What Does It Take To Succeed?

Succeeding on extreme projects means putting the Quantum Mindset to gain and sustain commitment throughout the project life cycle, which in turn means:

- Unleashing motivation and innovation to solve unbecoming project scenarios;
- Establishing stakeholder trust and confidence in the ability to succeed;
- Ensuring the customer receives value each step of the way;
- Maintaining control in the face of volatility; and
- Taking appropriate action when required.

Critical Path and Float

Critical Path: Longest Path School vs. Total Float Value School

In the early days of the development of the CPM, the longest path was the path with the lowest float. Using simple network logic (finish-to-start) only, the critical path of an un-progressed CPM network calculated using the longest path criterion or the lowest float value criterion is the same.

It is only when some advanced scheduling techniques are applied to the network model that the paths identified using these different criteria diverge.

Most practitioners would agree that the longest path is the true critical path. Even with the use of advanced techniques, if basic network rules are observed the total float value is a reasonably accurate way of identifying the critical path. But note that float values are displayed using workday units defined by the underlying calendar assigned to the schedule activity instead of in 7-day calendar units so that activities on a chain with uniform network tension may display different float values.

Negative Float: Zero Float School vs. Lowest Float Value School

When a project is behind schedule, the network model may display negative values for float. Technically, this results from the fact that the earliest possible dates of performance for the activities are later than the latest dates by which they must be performed in order for the overall network to complete by a constrained finish date. Thus the negative value is a direct indication of how many work days the schedule activity is behind schedule.

There are two schools of thought in interpreting the criticality of activity paths carrying negative float values. One school, which will be called the **zero float school**, maintains that all activities with negative float are, by definition, critical; assuming the definition of critical path is anything less than total float of one unit. The other school, which will be called the **lowest value school**, insists that only the activity paths that carry the lowest float value are critical.

In the context of the two critical path schools, longest path versus total float value, the total float value followers tend to align with the zero float thinking while the longest path supporters tend to think along the lines of the lowest float value school. However, neither one of these philosophical alignments is guaranteed, nor are they logically inconsistent.

Which one is correct ? It depends on which principles are considered. If only CPM principles are used to evaluate the theories, the lowest value school is correct. The zero float school may have an arguable point if contractual considerations are brought into play, since all paths showing negative float are impacting the contractual completion date.

For the purpose of this practice, the procedures and methods use the lowest value theory as the valid criterion for criticality where negative float is shown. Thus the true float value of a schedule activity carrying negative float will be calculated as the relative total float against the lowest float value in the network.

For example if the lowest float value in the network is minus 100, and another schedule activity shows a value of negative 20, the true float for that schedule activity, based on relative total float, is 80.

The potential also exists for fragnets of activities to have lower total float than the project longest or critical path. This occurs when activities are tied to intermediate project milestones (and not to overall project completion).

If such a scenario is observed, the analysis should also consider the contractual relationship or requirement for the intermediate milestones.

Quantifying 'Near-Critical'

The purpose of quantifying the near-critical path is to reduce the effort of identifying and analyzing potential concurrent delays. A rational system of identifying all activities and delays that are near- critical is the first step in objectively streamlining the process of evaluating the schedule for concurrent delays. Thus, if you choose to analyze all delays and activities on a network, the quantification of near-critical is unnecessary. But in most cases analyzing all activities, especially on large complex schedule is excessively time consuming and unnecessary.

Near-critical delays have the greatest potential of becoming concurrent delays. This is because a near-critical delay, upon consumption of relative float against the critical path delay, will become critical. Therefore the near-critical delays are the most likely suspects of concurrency, and therefore must be analyzed for partial concurrency to the extent that the net effect of that delay may exceed such relative float.

The determination of what a 'near critical' activity is depends on the following factors:

Duration of Discrete Delay Events

The insertion or extraction of delays affects the CPM calculations of a network model. Specifically, the duration of delays modeled in the analysis is directly proportional to the impact such delays have on the underlying network.

Because the effect results from insertion or extraction of delay, this is of obvious relevance to the modeled methods. But it is also relevant to the dynamic observation methods where the underlying schedule updates were prepared during the project by inserting delay events.

The maximum duration of the set of all delay events would measure the greatest potential effect resulting from insertion or extraction. Averaging the duration of the set of all delay events would provide a less rigorous average measure. The maximum or the average measure is added to the value of the float value of the critical path to yield the near-critical threshold. Any schedule activity or path carrying a float value between that threshold and the value of the critical path is considered near-critical.

The practical effect is that the greater the duration of the delay events used in the model the greater the number of activities that must be considered near-critical and subjected to concurrency evaluation. Under this criterion, the most obvious way of minimizing the number of near-critical activities is to minimize the duration of the delay events.

That is, a delay event of relatively long duration can be segmented into smaller sub-events for analysis and documentation. While ensuring a finer granularity of delay events gives rise to added work in modeling and documenting those delay events, the trade-off is less number of activities to analyze for concurrency.

Duration of Each Analysis Interval

The duration of the analysis interval is the length of time from the start of the segment of analysis to the end of that segment. In the dynamic methods where the analysis is segmented into multiple analysis intervals, the measure would be the duration of each period or window.

In the static methods the duration of the analysis interval is the duration of the entire project or whatever segment of the project represented by the schedule used for the analysis.

Although this would mean that the static methods would have to perform a concurrency analysis on the entire network, it is both impractical and unnecessary to do so. Thus for methods that use the as-built as a component, determination of near criticality can be made pursuant the procedure established below regarding the as-built critical path.

The concept underlying this criterion is the fact that the potential change in the critical path due to slippage or gain caused by progress (or lack thereof) during the analysis interval is equal to the duration of that interval. Thus, if the interval is one month, the maximum slippage that can occur, excluding non-progress revisions and delay insertions, is one month. Hence near-criticality threshold would be set by adding 30 calendar days to the float value of the critical path.

This criterion is most relevant with the dynamic methods that use the concept of analysis intervals. An implementation that uses large windows would have to consider more activities near-critical than one that uses many small windows. An extreme example of the latter is an as-planned versus as-built analysis that analyzes progress on a daily basis. This would have a near-critical threshold value of one day over the critical path.

The practical tradeoff is by increasing the number of analysis intervals one can reduce the work load of concurrency analysis, and vice-versa.

Historical Rate of Float Consumption

To augment the previous analysis interval criterion, the rate at which float is being consumed on a given activity-chain over time is worthy of consideration. The rate of consumption should be no more than the duration of the analysis interval per interval.

Thus, where the interval is one month, if an activity chain is outside the near-critical threshold but is consuming more than 30 calendar days of float per month in the past updates, the trend indicates that it would become near-critical in the next period. Therefore it should be considered near-critical even though it carries more relative float than the duration of the interval.

Amount of Time or Work Remaining on the Project

As the project approaches completion, CPM may not be the best tool to assess criticality. This is true especially in a problem project where many activities are being performed out-of-sequence in an attempt to meet an aggressive deadline. Even on a normal project, as the work transitions from final finishes to punch list work, CPM updates may be abandoned in favor of a list or matrix format of work scheduling. It is often said that near the end 'everything is critical'.

Reduced to an equation, the percentage of activities remaining on the network that should be considered near-critical is proportional to the degree of completion of the schedule.

Therefore after 90 to 95 percent of the base scope and change order work are complete, you may want to consider all activities on the schedule as near-critical regardless of float.

Identifying the As-Built Critical Path

The as-built critical path cannot be directly computed using CPM logic since networked computations that generate float values can be generated only to the future (right) of the data date. Because of this technical reason, the critical set of as-built activities is often called the controlling activities as opposed to critical activities. Even in a modeled collapsible as-built (3.8) float is not a relevant indicator of criticality because the late dates are not used in modeling the as-built schedule.

The closest the analyst can come to a direct computational determination is to cumulatively collect from successive schedule updates the activities that reside on the

critical path between the data date and the data date of the subsequent update. The same technique can be used to determine the as-built near-critical activities. If the updates are available, the following is the recommended protocol.

- a) Use all the critical and near-critical activities in the baseline schedule. If modifications were made to the baseline for analysis purposes use both sets of critical activities, before and after the modification.
- b) For each schedule update, use the critical and near-critical chains of activities starting immediately to the right of the data date.
- c) Also use the predecessor activities to the left of the data date that precede the chains found in (b) above.
- d) Use the longest path and near-longest path criteria in addition to the lowest float path criterion in identifying the activities.
- e) If weather or other calendar factors are at issue, also use a baseline recalculated with an alternate calendar reflecting actual weather or other factors to gather critical and near-critical activities.

An enhanced protocol would add the following sets to the recommended protocol.

- f) If appropriate, perform (b) through (d) above using different calculation modes if they are available.
- g) Where significant non-progress revisions were made during the updating process, repeat (b) through (d) using the progress-only, bifurcated schedules
- h) If appropriate, examine the resource-leveled critical path as opposed to hard-tied sequences, sometimes called preferential logic, based solely on resources.
- i) Conversely, if resource constraint is at issue and the schedule logic does not reflect the constraint, insert resource-based logic to obtain a critical path that considers all significant constraints.

But objective identification of the controlling activities is difficult, if not impossible, without the benefit of any schedule updates or at least a baseline CPM schedule with logic. Therefore, in the absence of competent schedule updates the analyst must err on the side of over-inclusion in selecting the controlling set of as-built activities.

The determination must be a composite process based on multiple sources of project data including the subjective opinion of the percipient witnesses. All sources used to identify the as-built controlling path should be tabulated and evaluated for reliability. Contemporaneous perception of criticality by the project participants is just as important as the actual fact of criticality because important project execution decisions are often made based on perceptions.

◆ Perceived or subjective as-built critical paths can be based on:

- Interview of the hands-on field personnel;
- Interview of the project scheduler; and
- Contemporaneous non CPM documentation such as:
 - ◆ monthly update reports;
 - ◆ meeting minutes; and
 - ◆ daily reports.



International Chamber of Commerce

Dispute Resolution Services

ICC's Dispute Resolution Services are particularly well suited to the resolution of disputes that have a commercial or international character.

Using ICC Dispute Resolution Services

ICC is a leading provider of dispute resolution services for individuals, businesses, states, state entities, and international organizations seeking alternatives to court litigation.

It is not necessary to be a member of ICC to benefit from its dispute resolution services. Any and all parties wishing to take advantage of the benefits of these services may do so.

A 2010 research survey undertaken by the School of International Arbitration at Queen Mary University, London, concluded that "ICC is the most preferred and widely used arbitration institution", with 50% of respondents preferring ICC. The next most popular institution was ranked first by only 14% of respondents. The survey also revealed that "the most commonly used institution over the past five years was ICC (56%)", followed by a tied second place for two other institutions at 10%.

The choice of one or more ICC services as the dispute resolution method should ideally be made when businesses and governments negotiate their contracts and treaties. ICC provides standard and recommended clauses for this purpose, which can be modified to take account of the requirements of national laws and any other special requirements.

Naturally, parties can draft their own clauses. And even if the treaty or contract does not contain such a clause, they can still agree to use ICC later, should a dispute arise. However, agreeing to use ICC Dispute Resolution Services as early as possible provides greater certainty and reduces any potential delays.

A range of dispute resolution services

All ICC Dispute Resolution Services are based on rules that only ICC can administer. This is particularly so for the ICC Rules of Arbitration, which can only be administered properly by the ICC Court. All of the ICC sets of rules are neutral, cost-effective and designed specifically for the resolution of international disputes.

Parties choosing ICC can tailor the dispute resolution service to their particular needs thanks to a range of options. Depending on the circumstances, parties might prefer one, or a blend, of the services.

Arbitration – Under the ICC Rules of Arbitration, ICC Arbitration is administered by the ICC International Court of Arbitration, assisted by the ICC Court's Secretariat. ICC Arbitration is a flexible procedure that leads to a binding decision from a neutral arbitral tribunal (unless the parties settle during the arbitration, which is common). An ICC arbitral tribunal's decision, called an award, is often complied with voluntarily by the unsuccessful party. Where there is a failure to comply, the award can be enforced in more

than 145 countries around the world under both domestic and international enforcement regimes including, notably, the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards.

ADR (Amicable Dispute Resolution) – Under the ICC ADR Rules, ICC ADR is administered by the ICC International Centre for ADR. ADR aims to achieve a negotiated settlement with the assistance of an independent neutral. The default procedure under the ADR Rules is mediation, but they also encompass conciliation, neutral evaluation and a variety of combinations of these and other techniques. Where successful, ADR results in an agreement that is contractually binding but cannot itself be enforced internationally like an arbitral tribunal award.

Expertise – Under the ICC Rules for Expertise, ICC Expertise is administered by the ICC International Centre for Expertise under the supervision of the ICC International Centre for ADR. The Centre for Expertise proposes and appoints experts in almost every field of business (technical, financial, legal, etc). Additionally, the Centre may:

- ◆ Administer the expert's work so as to help ensure efficiency and cost-effectiveness, and can review the expert's report;
- ◆ Propose experts for arbitral tribunals – a free service when requested by a tribunal acting under the ICC Rules of Arbitration; and/or
- ◆ Appoint experts to dispute boards, as adjudicators or to fulfil other procedural needs.

Dispute Boards – Under ICC Rules Dispute Boards are administered under the supervision of the ICC International Centre for ADR. An ICC Dispute Board is a standing body with one or three members that helps resolve disagreements and disputes in medium- and long-term contracts. ICC Dispute Boards are widely used in global construction and infrastructure projects, and other fields such as information technology and intellectual property.

With an ICC Dispute Board in place, contracting parties can enjoy reduced dispute resolution costs, and avoid expensive delays and disruption. ICC Dispute Boards may informally assist parties to overcome disagreements, while providing recommendations and decisions on any disputes that arise and are referred to them.

DOCDEX – Under the ICC Rules for Documentary Instruments Dispute Resolution Expertise, DOCDEX is administered by the International Centre for Expertise under the supervision of the ICC International Centre for ADR.

DOCDEX is a fast, cost-effective and straightforward way of settling letter of credit disputes.

DOCDEX also helps to resolve disagreements arising from other instruments, such as bank-to-bank reimbursements and collections.

A panel of three, hand-picked, independent experts assesses each DOCDEX case according to the relevant ICC banking rules. To ensure compliance with the rules, the decision is checked by a technical expert from the ICC Commission on Banking Technique and Practice. If all parties agree, the panel's decisions can be made contractually binding.

Get a copy of the ICC rules at the following link:

<https://www.dropbox.com/s/cex0hzjobn18tzd/GUIDE%20TO%20ICC%20ADR.pdf>



Cost Management - Cost Control

The primary purpose of the Cost Control process is to influence the factors that create cost variances and to control changes to the project budget.

One of the most common problems in project management is overrunning the project budget. There are a number of plausible explanations for this. People may be more focused on the technology and making sure that the project requirements are met, literally at the expense of the budget. In other situations, the need to define and observe a budget constraint is not recognized; therefore cost performance is running "open loop," until the sponsor or customer calls attention to the problem.

Project Cost Control includes:

- Influencing the factors that create changes to the cost baseline;
- Ensuring that requested changes are agreed upon;
- Managing the actual changes when they occur;
- Assuring that potential cost overruns do not exceed the authorized funding for a particular phase and the total funding for the project;
- Monitoring cost performance to detect and understand variances from the cost baseline;
- Recording all appropriate changes accurately against the cost baseline;
- Preventing incorrect, inappropriate, or unapproved changes from being included in the reported cost or resource usage;
- Informing appropriate stakeholders of approved changes; and
- Acting to bring expected cost overruns within acceptable limits.

What information do you need to implement cost control?

Cost Baseline

The cost baseline, also described as the time-phased budget or S-curve, was created in the Cost Budgeting process. Once established, the baseline serves as a constant reference for measuring and monitoring cost performance on the project.

Project Funding Requirements

Funding requirements are derived from the cost baseline. Fund flow should be positive; it should exceed the cost baseline in every period by an amount that will cover expenditures associated with both early progress and cost overruns. Funding occurs in incremental amounts. Each increment must be sufficient to cover all expenditures in every period between the posting of the first increment and the posting of the next increment.

Funding sources include payments from the customer, revenue from sales, loans from a bank, or appropriations from the organization's financial authority.

Performance Reports

Performance reports organize and summarize information gathered; present the results of any analysis performed; and provide information and the level of detail required by stakeholders.

Common performance report formats include:

- Bar charts;
- S-curves;
- Histograms; and
- Tables.

Performance reports generally should be short documents (one to two pages for a monthly report) that relate the relevant facts of the project performance. Although formats can vary significantly to address different stakeholder needs, many common elements are included in most performance reports; for example:

- Reporting period;
- Work accomplished in reporting period;
- Schedule and cost status and performance;
- Problems experienced or approaching;
- Corrective actions, or plans;
- Summary of accomplishments planned for the next reporting period; and
- Detailed quantitative reports, included as attachments (such as earned value analysis data).

Work Performance Information

Work performance information provides data on the status of project activities, for example, if project deliverables are not being completed on a timely basis and at or below the planned cost. Information includes, but is not limited to:

- Costs authorized and incurred;
- Estimates to complete the schedule activities;
- Activities completed or incomplete, or percent complete of the schedule activities; and
- Deliverables that have been completed and those not yet completed.

Approved Change Requests

Approved change requests from the Integrated Change Control process are documented, authorized changes that can modify terms of the contract, project scope, cost baseline, or cost management plan. Changes are usually implemented by the project team once they have been approved.

Project Management Plan

The project management plan is a document that specifies how the project is executed, monitored and controlled, and closed. The project management plan can be a summary level or detailed document and can contain one or more subsidiary plans or other components. The cost management plan component and other subsidiary plans are considered when performing the Cost Control process.

Cost Control Process

Cost Change Control System

A change control system is a formal documented process that describes when and how project documents may change. It describes the people who are authorized to make the changes and the paperwork needed to make the changes.

Assuming that a variance from the plan has been identified and a course of action has been determined, the change control system is employed to coordinate an integrated change to the project baseline.

Normally the change control system is a single, integrated mechanism for controlling changes. The cost element of that change control system should be just one additional aspect of the overall system. Details on controlling cost changes should be described in the project's cost management plan.

Performance Measurement Analysis

Performance measurement analysis is a mechanism for quantifying the current level of accomplishment of the project management plan. Any deviations from the plan (i.e., over or under budget) are to be reported as variances. Variances exceeding a prescribed threshold must be clearly identified and managed to reduce the impact to an acceptable level. The Earned Value Technique (EVT) is an example of a performance measurement technique, discussed further in its own section.

Forecasting

In assessing current project performance as well as the impact of known variances, forecasting is a technique for extrapolating current performance data to an estimate of future performance. In other words, will the project continue to operate at, under, or over budget and by how wide a variance? Forecasting is one of the functions performed by the EVMS.

Trend analysis is a forecasting technique that involves examining project results over time to determine if performance is improving or deteriorating.

Key functions of trend analysis include:

- Evaluating a project's results over a period of time;
- Identifying a pattern of performance; and
- Showing improvement, stabilization, or decline.

Proper trend analysis requires:

- A controlled baseline;
- Correct and timely data; and
- Comparison of recent and long-term performance.

Trend analysis looks at performance to date and identifies a pattern of results that indicates a trend. The trend is used to forecast future results.

Successful trend analysis depends on:

- **Controlled Cost Baseline:** The project manager must assess the actual spending and schedule performance against the planned spending during the same schedule period. Without a time-phased cost plan, the project manager cannot compare the burn rate to any comparable baseline;
- **Data and timing:** If cost and schedule data are based on vague estimates, the trend analysis will be equally vague. If performance reports are scheduled quarterly, they may not be frequent enough to measure trends unless the project is very long-term (several years); and
- **Identified trend:** The trend is the important element in trend analysis; it may indicate a pattern toward satisfactory or unsatisfactory performance. The focus is on the long term. Often, project managers focus too much on the current data and immediate needs.

Project Performance Reviews

Project performance reviews are typically formal meetings held to assess the current status of the project in terms of scope, schedule, and budget. The completion of work should be reported with an assessment of the health of both the schedule and budget.

Performance reviews are usually used in conjunction with other performance reporting techniques. For example, the need for corrective and preventive action may be identified in the performance review through the review of the quantitative results from the EVMS. Discrete issues should be identified as part of an issue management process and new risks should also be identified.

Project Management Software

Project management software tools of various types are helpful in creating estimates, assembling budgets, and controlling cost performance. They range from spreadsheets and project scheduling tools to project management tool suites.

Project managers enter cost or labor rate data in the project management software, or into a spreadsheet, to manipulate variables in order to see the results of different options. Other, more advanced statistical analysis tools are also used in some cases.

Variance Management

The cost management plan as discussed previously should contain specific thresholds and descriptions of appropriate corrective actions to be used in response to budget variances.

For example, a relatively minor variance, such as less than 5%, should be reported and noted. The project manager should be aware of the reasons for the variance and should form a strategy for how best to deal with it.

As variances grow to a larger percentage of budget (perhaps 10%), formal reporting using the variance management system should be required. This will call for an analysis and a written corrective action plan.

If the control account variance continues to expand and does not respond to corrective action, it should be escalated to higher levels of attention in the organization. A formal system such as this minimizes surprises to the customer or to senior management. Also, it ensures that more senior management has the opportunity to assess the problem as early as possible.

Conducting a Performance Measurement Analysis

The first step in performance measurement analysis is to ensure the completion of a project management plan and the establishment of a cost baseline. This baseline becomes known as the *planned value* (PV) of the project (and is the same as the previously mentioned S-curve). It is represented as a spending curve for each period of the project.

Periodically during execution of the project, usually monthly, but perhaps more frequently, the following steps are performed.

1. Collect performance reports from each control account manager. These should state which planned tasks for the reporting period have been completed.
2. Compute the value of these planned tasks. The total value of completed tasks is known as *earned value* (EV). These amounts are summed and compared to the *planned value* (PV).
3. Compute a *schedule variance* (SV) by subtracting PV from EV.
4. Collect actual cost performance from the finance team. They will calculate the actual cost by summing all paid invoices and labor sheets during the reporting period. This sum is called *actual cost* (AC).
5. Compute the *cost variance* (CV) by subtracting AC from EV.

The implementation of performance measurement analysis can generate some confusion, but given a well-defined process and a commitment to the goal of simplicity, it is possible to achieve a practical and quantitative method for measuring project performance.

Earned Value Management System (EVMS)

An **EVMS** is the most commonly used performance measurement technique for managing projects. An EVMS compares the schedule and cost information at a point in time and avoids using the project manager's subjective interpretation of data.

Earned Value Analysis

The EVMS is based on the technique referred to as *earned value analysis*, which integrates scope, cost (or resource), and schedule measurements to assess project performance. Earned value provides a determination of whether or not work is being completed as planned.

Earned value analysis is not new. The government has used it for decades in the formal Cost/Schedule Control System (C/SCS). In its current form, the government method describes thirty-five criteria to guide effective performance measurement, and requires formal certification.

Earned value analysis is now broadly accepted as an efficient, quantitative method for assessing project status. Current project management software tools include features that incorporate earned value management techniques into project planning.

Benefits of Using an EVMS

Using an EVMS allows the project manager to integrate both schedule and cost information to gain a more comprehensive understanding of project performance. This gives the project manager a more complete view of project performance; schedule-only or cost-only comparisons do not provide the same data. This missing data could lead to misinterpretations of project performance.

An EVMS compares the scope, schedule, and cost information at a point in time. In a sense, it provides a snapshot of the Triple Constraint triangle, showing the current status of the project. This minimizes the errors and misrepresentations possible with a schedule-only or cost-only comparison. Integrating schedule and cost status lets project managers forecast project status from trend information. An EVMS requires the project management team to correctly establish baselines and to learn earned value management terms.

For an EVMS to be effective, it is important for the project manager to ensure that the project baseline is valid, otherwise the data resulting from the calculations cannot be compared to a standard. An EVMS also allows the project manager to forecast future project performance by identifying trends and calculating results if the trend continues.

Earned Value Management System (EVMS) Terms

An EVMS uses a concept of "dollarizing" the schedule and performance data. A solid understanding of earned value concepts and terms is a prerequisite for the effective use of the associated methods.

Three fundamental EVMS terms include:

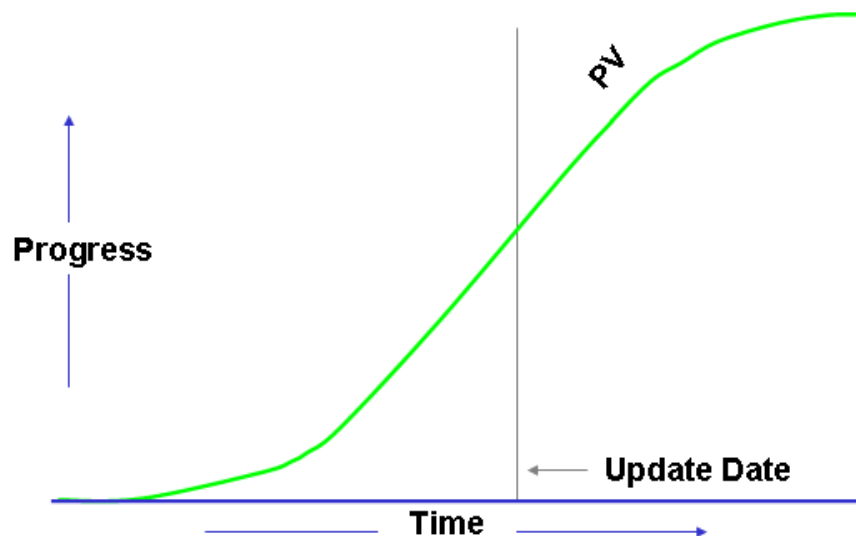
- **Planned Value (PV):** Agreed value of work to be accomplished in a given period;
- **Earned Value (EV):** Agreed value of work that was actually accomplished; and
- **Actual Cost (AC):** Real cost of the work performed.

Collecting and Analyzing Planned Value (PV)

Planned Value (PV), previously called **budgeted cost of work scheduled (BCWS)** in the government system, is the value of work that was scheduled to be completed as of a certain date. The PV is really a curve, or time-phased cost budget.

At the end of the project, the final PV equals the **budget at completion (BAC)**. PV is established by time-phasing the project's budgeted costs.

When the project plan is approved, the PV becomes a fixed standard of reference. When it comes time each status reporting period to update the earned value analysis, the PV value is obtained by consulting the project baseline information for the associated time period.



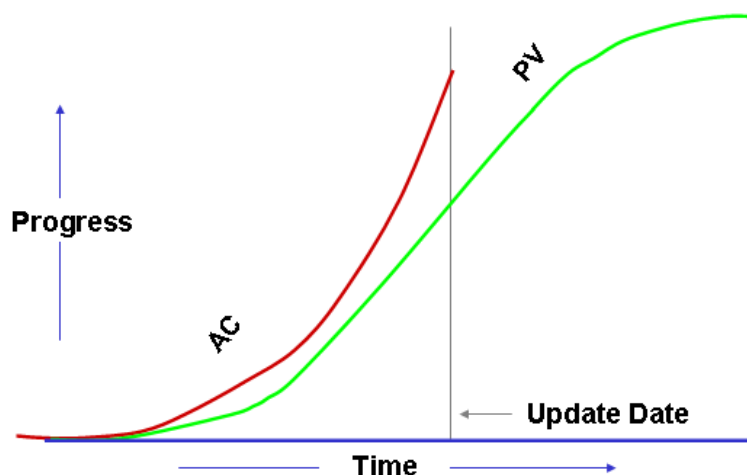
Collecting and Analyzing Actual Cost (AC)

Actual Cost (AC) is another parameter that must be measured during each status reporting period. This is typically information collected by the organization's cost accounting group, using the company cost accounting system.

The cost accounting group collects all costs against the project work packages and control accounts, including labor accounting sheets, materials invoices, and other direct costs such as travel and contract labor. AC identifies what it really cost the project to operate during the reporting period, independently of what *work* was actually accomplished.

The AC is reported as both the new costs for the current period and the cumulative cost for the project since inception. The reporting of cost is independent of the project team and represents the expenditure of real money, unlike the earned value discussed further in the course. The only control the project manager has over AC is to ensure that work is performed efficiently, as planned, using the appropriate resources. Inaccurate accounting of labor is a common cause for cost variances.

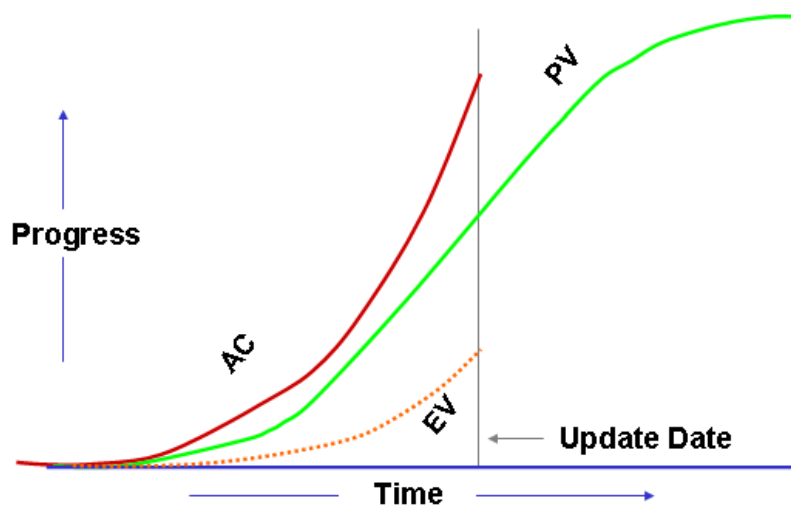
AC is also referred to in older earned value management systems as the **actual cost of work performed (ACWP)**.



Collecting and Analyzing Earned Value (EV)

EV, the central concept in this technique, is slightly difficult to grasp at first. In very basic terms, every activity or item of work is associated with a dollar value. When you complete a particular activity, you "earn," or receive credit for, that declared value.

A frequent point of confusion is that the *actual cost* of the job may be different from the earned value. Earned value is the agreed *value* of the task, not what you *actually spend* on it. If a contractor submits an invoice for an unforeseen additional amount, the actual cost of the job will be the amount of the invoice, but the earned value remains the original negotiated amount. The difference between the earned value and actual cost will be an indication of *cost variance*.



Methods for Computing Earned Value

EV, the method for assigning *value earned*, is calculated based on one of several predetermined methods. In the simplest concept, the value earned is exactly the planned value of the task. However, determining *when* or *how* the value is applied may use different methods.

Keep in mind that the calculation of earned value for a task is different than an individual reporting status against the task. Status reporting and earned value analysis serve different purposes. Earned value analysis allows the project manager to measure and report the overall project health, evaluating project schedule, cost, and work performed. It provides measures to detect variances, and therefore determine the overall ability to meet project objectives.

The information presented below outlines the various methods for computing earned value along with descriptions of how earned value is assigned and their recommended uses.

In practice, a project manager may elect to use only a few of these earned value techniques. They are discussed in more detail on the pages that follow.

0-100 %

How earned value is assigned for this method

No credit for the start of a task, but 100% upon completion

Recommended use of this method

When tasks are scheduled to complete within one accounting period

50-50 %

How earned value is assigned for this method

50% value when the task starts, and 50% upon completion

Recommended use of this method

When tasks are scheduled to complete within two accounting periods

Percent Complete

How earned value is assigned for this method

Value estimated by the person responsible for the task's completion

Recommended use of this method

Not generally recommended, although it may be used for longer work packages in which distinct milestones are not recognized

Weighted Milestones (WM)

How earned value is assigned for this method

Value given upon milestone completion, where interim milestones mark the completion of a longer task or work package

Recommended use of this method

For longer work packages for which discrete methods do not seem appropriate

Level of Effort (LOE)

How earned value is assigned for this method

Value earned is proportionate to the total budget of the work package and based on elapsed duration

Recommended use of this method

Minimize the use of LOE to less than 10% of the total project budget

Apportioned Effort (AE)

How earned value is assigned for this method

Value is planned and measured in relation to another (non-LOE) task

Recommended use of this method

Not recommended for frequent use but may help in instances where it is difficult to determine the exact value of the work

Percentage Methods for Computing Earned Value

0-100%

The **0/100%** method is the simplest and usually the best method for tasks of relatively short duration compared to the standard reporting period length. For example, if the project status data is collected once per month, this method should be used on tasks of less than 30 days duration.

As an example of computing earned value using the 0/100% method, assume that there is a work package to paint a room in your company's headquarters. You approved the painter's estimate totaling \$1,000 in labor and materials to perform the job, with a completion date of Friday. When the job is complete, you will credit the EV column with \$1,000, the agreed value of the job. This tracks the completion of the SCOPE leg of the triangle. If the painter submits an invoice for an unforeseen additional \$50 in materials, the actual cost of the job will be \$1,050, but the earned value remains the original negotiated amount of \$1000.

Suppose that on Friday the job has not yet been completed, so when the status report is filed, the value earned remains at \$0. The difference between the earned value and planned value is an indication of *schedule variance*. This variance will continue until the work is completed.

So, if the job is delayed until Wednesday of the next week, the schedule variance will be negative \$1,000 until the completion is recorded, at which time the schedule variance returns to \$0. Alternatively, if the painter finished the job early, a positive schedule variance would be posted.

The 0/100% method is the-all-or-nothing approach, in which no credit or value is earned until the task in question is completed. In the above example, the painter earned no value until the room was completely painted (and presumably cleaned up and inspected). This method eliminates the common project management problem of subjective reporting such as "we're almost done" or "97% complete", etc. Instead, the task owner must ensure complete execution, which generally also assures higher quality results.

50-50%

The **50/50%** method is a minor adjustment to the 0/100% for tasks of longer duration compared to the reporting period. If project data is collected monthly, but a task is planned to take six weeks, the task owner would be showing a negative variance for the first status report, even though the work may be on track. In fairness, the 50/50% method allows the task owner 50% credit for the work, as long as the work has been started. This reduces the negative variance to a smaller amount, and assuming the job finishes on time, the variance will disappear by the end of the next reporting period.

Other variations on 50/50% may be defined, such as 25/75%, 40/60%, depending on the rules in the organization. These should be established as standards in the project's cost management plan.

Percent Complete

The **Percent Complete** method is one of the recognized methods, but should not be used as a general practice. The discrete 0/100%, 50/50% or milestone methods are much more effective in controlling the reporting of task completion. The percent complete method is subject to abuse, as task owners may have no objective definition of what "60% complete" actually means. Often this is reported incorrectly as the percent of the time that has elapsed rather than the percent of the work that has been completed.

While not generally recommended, this method can be useful for longer work packages in which distinct milestones are not recognized. If percent complete is allowed as a method, the work package template should provide an objective basis for awarding percent complete.

For example, if the work package involves testing to ensure 30 test cases pass successfully, one could earn 10% each time 3 more test cases pass. The cost management plan or the specific work package planning template must provide explicit definitions of each milestone.

Milestone and Effort Methods for Computing Earned Value

Weighted Milestone

The Weighted Milestone method is used for longer work packages for which discrete methods do not seem appropriate. Assuming that the process in the work package has clearly understood interim milestones, appropriate credit should be assigned to the accomplishment of each milestone.

Level of Effort (LOE)

The Level of Effort (LOE) method should be used very sparingly, usually only for the supervisory tasks on the project. The labor costs of the supervisors, such as the project manager and any clerical support staff, must be accounted for in the PV and EV baselines. The problem, however, is identifying exactly what work has been done, or what deliverables have been produced. After all, supervisors have highly unpredictable days, integrating all the other team members' activities, attending meetings, filing reports, and communicating with the stakeholders.

Therefore, one assumes that the supervisors are always on schedule and allows them to earn value proportionate to the total budget of the supervisor's work package. For example, if there are 30 days of supervisory labor planned, the supervisors "earn" 1 day each day of the project.

A general rule of thumb is to minimize the use of LOE to less than 10% of the total project budget. Otherwise, large sums of LOE value will mask or disguise smaller variances in other work packages.

Apportioned Effort Method

The Apportioned Effort Method falls into a category similar to LOE, in that it should not be used often but may help in instances where it is difficult to determine the exact value of the work.

For example, if a quality inspector is needed to monitor the activities of the test group, the quality work package would earn value at a predetermined rate proportional to the test work package. As the testing progresses, the quality work earns a corresponding percentage of work complete.

Analyzing Cost and Schedule Variances

Earned Value Variances and Indices

Once the status has been determined for the project, i.e., the PV, EV, and AC values have been determined for the current period *for each work package*, what does the data mean and how is it presented in a useful way?

Several earned value calculations allow the project manager to evaluate both schedule performance and cost performance.

A **variance** is a difference between actual project results and planned or expected results. A *positive* variance means that a project is ahead of schedule or under budget, while a *negative* variance indicates that a project is behind schedule or over budget.

An **index** is a measure used to assess the magnitude of any project variances that do occur. For indices, a value greater than 1.00 is *better* than planned efficiency, while a value less than 1.00 indicates that efficiency is *less* than planned.

EVMS Schedule Formulas

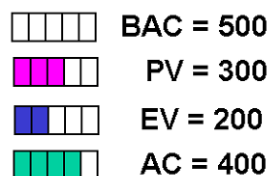
- Schedule variance (SV) = EV - PV
- Schedule performance index (SPI) = EV/PV
- Preferred state: SV is positive, and SPI is greater than 1.00
 - This means that the earned value is greater than the planned value. More work has been earned than planned, so the project is on or ahead of schedule.

EVMS Cost Formulas

- Cost variance (CV) = EV - AC
- Cost performance index (CPI) = EV/AC
- Preferred state: CV is positive, and CPI is greater than 1.00
 - This means that the earned value is more than the actual cost. More value has been earned than the actual cost expended, so the project is on or under budget.

Example of EV Components

The example below illustrates these values at a time of status measurement.



EV Component Example

In this example, the project is to build five prefab sections of a house for a total project budget of \$500 (**BAC**). Recall that at the end of the project, the final PV equals the **budget at completion (BAC)**. The task now is to compute the PV at this point in time.

It was expected that \$300 worth of tasks were to be completed (PV). In reality, only \$200 worth has been completed (EV); but the accounting system collected expenses of \$400 (AC) on the project.

EVMS Example

The following EVMS example uses the earned value formulas to calculate the variances and indices.

- $PV = 300$
- $EV = 200$
- $AC = 400$
- $SV = EV - PV = 200 - 300 = (100)$
- $SPI = EV/PV = 200/300 = 0.67$
- $CV = EV - AC = 200 - 400 = (200)$
- $CPI = EV/AC = 200/400 = 0.50$

The calculations in this example indicate that the project is behind schedule and over budget, with poor schedule and cost efficiency ratios.

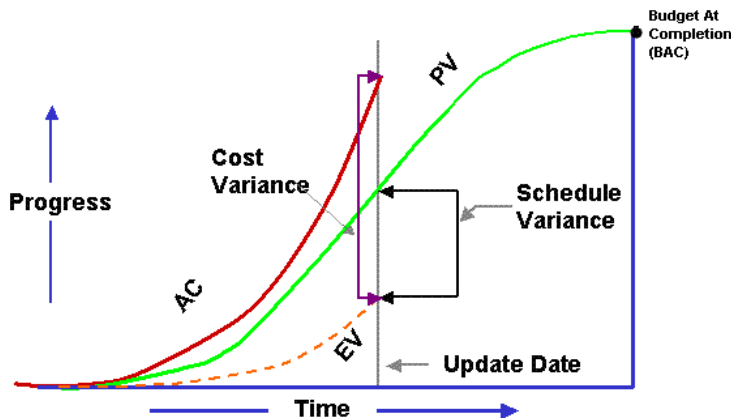
- The SPI of 0.67 indicates that the project has accomplished only 67% of the work it was scheduled to accomplish by the status date.
- The CPI of 0.50 indicates that for every \$1.00 spent on the project, only \$.50 worth of work has been completed.

EVMS Diagram

The results of the EVM analysis are usually graphed to provide a powerful status report for the project. Such a diagram can be tracked at the total project level, and also for each control account. Project management software tools can help present this information.

The EVMS data in the diagram below depicts the values over time for the three key parameters, PV, EV, and AC. The status reporting period during which these parameters were calculated is shown via the *Update Now* vertical line. At that point in time, the schedule and cost variances are depicted on the graph as the difference between EV and PV (schedule variance) and between EV and AC (cost variance).

Another powerful feature of the diagram is its ability to show the trends in performance from one reporting period to the next. An experienced eye can read these charts quickly and draw conclusions about the project's performance, past, current, and future.



The EVMS diagram also illustrates how EV calculations provide more insight into the overall project health than straight comparisons between the original baselines and actual costs.

If the actual costs are less than the original cost baseline, it may appear that the project is under-spending. However, by comparing EV to AC, a project manager realizes that, in reality, the project is paying too much for the work actually performed.

By comparing EV to PV, it is apparent that less work was accomplished than planned at the point of determining the project's status; therefore, the project is behind schedule.

The key to understanding EV is that the cost or schedule is always compared to the value of the work performed-**EV** or the **earned value**.

Forecasting Costs

When the project manager knows the current project cost, he can also predict where the project is going using EV. This requires calculating **at-completion** and **to-completion** costs. There are several terms to define in learning and applying these calculations.

Estimating the At-Completion Project Cost (Terms)

Budget at Completion (BAC)

- Total cumulative PV at completion of a schedule activity, work package, control account, or other project component
 - When applied to the entire project, BAC represents the total budget of the project, not including management reserve
 - At project completion, BAC will equal PV

Estimate at Completion (EAC) - also called Latest Revised Estimate (LRE)

- Estimate, or forecast, of the most likely total value based on project performance and risk quantification
 - EAC can be greater than or less than BAC

Estimating the To-Completion Project Cost (Terms)

Estimate to Complete (ETC)

- Estimate for completing the remaining work for a schedule activity, work package, control account, or other project component
 - ETC is the difference between EAC and actual costs to date

Various techniques to calculate EAC and ETC are discussed on the following pages.

Estimating the At-Completion Costs

Examples of Estimating At-Completion Costs

At-completion values of interest to the project manager and stakeholders are calculated using the methods below. These calculations use the same data as the EVMS example of the prefab construction project:

- Total budget, or budget at completion (BAC) = 500
- Planned value (PV) for this stage of project = 300
- Earned value (EV) of project completed at review = 200
- Actual cost (AC) = 400
- Schedule variance (SV) = $EV - PV = 200 - 300 = (100)$
- Schedule performance index (SPI) = $EV/PV = 200/300 = 0.67$
- Cost variance (CV) = $EV - AC = 200 - 400 = (200)$
- Cost performance index (CPI) = $EV/AC = 200/400 = 0.50$

There are many forecasting techniques to calculate EAC. Each of these approaches can be the correct approach for any given project and will provide the project management team with a signal if the EAC forecasts are not within acceptable tolerances.

Calculating EAC using earned value data

- **Using remaining budget:** The cumulative actual costs to date plus the budget required to complete the remaining work, which is the budget at completion minus the earned value
 - $EAC = AC + (BAC - EV) = 400 + (500 - 200) = 700$
- **Using CPI:** The cumulative actual costs to date plus the budget required to complete the remaining work, which is the BAC minus the EV, modified by a performance factor (often the CPI).
 - $EAC = AC + [(BAC - EV)/(CPI)] = 400 + [(500 - 200) / .50] = 1,000$

Calculating EAC using ETC (ETC is discussed further on the following page)

- A bottom-up Estimate to Complete (ETC) for the remaining work is provided by the performing organization. Often used when past performance shows that the original estimating assumptions were fundamentally flawed or are no longer relevant due to a change in conditions.
 - $EAC = AC + ETC$

ETC based on new estimate

The ETC is a manual revised estimate for the remaining work in the control account, as determined by the performing organization. This more accurate and comprehensive completion estimate is an independent, non-calculated estimate to complete all of the work remaining, and considers the performance or production of the resource(s) to date.

The ETC for the project is calculated by summing the manually revised individual control account estimates.

The decision to manually create a new ETC should be balanced with the time it will take to perform it. If not calculated manually, the ETC can be calculated based on earned value data.

Importance of Early Analysis

Hundreds of studies across many industries have revealed that a pattern of variance from the baseline is usually set early, and the variances only get worse as the project continues. If a project manager's ability to predict the first 20% of the project is poor, his ability to predict the remainder of the project is usually worse.

Early analysis results provide forecasting input. Based on history, after 15% to 20% of a project has been completed, the CPI will not change by more than 10%, and will probably get worse. For example, a CPI of .80 at the 20% point will probably not recover to reach a CPI of over .88.

It is the project manager's responsibility to keep the project on schedule and within the project budget, keeping the at-completion costs as close to the original estimate as possible. It is also the project manager's job to get the project back on track when a variance has been discovered. Historical data indicate that early project analysis has the most potential for impacting the project, if corrective actions are necessary.

The 'To Complete Performance Index' (TCPI)

The TCPI is a calculation that indicates the cost performance (CPI) needed for the remainder of the project to complete either on budget (BAC) or at an estimated at completion (EAC) value. The denominator of the TCPI formula is adjusted depending upon which parameter is used, BAC or EAC:

- CPI needed to complete on budget: $(BAC - EV)/(BAC - AC)$
- CPI needed to complete at the EAC value: $(BAC - EV)/(EAC - AC)$

Other Performance Measurements

Many types of performance measures are available, such as:

- Status of quality measurements;
- Status of risk management plan;
- Status of technical performance measurements; and
- Status against other planned baselines
 - Lines of code
 - Labor hours.

Many different items can be tracked and used as performance measurements. Run charts, statistical process control charts, and other measurements from the quality plan are all performance measurements. Tracking identified risks and mitigating the risks are areas that affect performance as well as cost and schedule.

Technical Performance Measurements (TPMs) are used by some industries to track how well the product is achieving critical performance parameters. Depending on the product, the metric being tracked could be weight, power consumption, fuel consumption, power output, throughput, production price, utilization percentage, capacity, or operational use data

Variance Analysis

Variance analysis involves comparing actual progress results to planned or expected results. The differences between actual project results and planned or expected results (baseline values and current or projected results), becomes the variance. Variance analysis can be used to quickly detect deviations from desired baselines. The comparison can be within the current period or cumulative over several periods.

Variance analysis allows the project manager to identify differences between the work results and the project plan. Identifying these variances from the desired baselines is only the first step in status reporting. Simply knowing the variances will be of little value in ensuring a project's success.

Once a variance is identified, the project manager should determine what caused the variances (root cause) and plan a corrective action. Action must be initiated if the variances are negative or potentially harmful to the project's intended outcome.

In many cases, the corrective actions will require some changes to the project. These must be documented and managed; in many cases, the changes will need to come under configuration control.

Variance Analysis Reports

Once a variance is detected, whether it is in cost, schedule, or scope and quality, it should be corrected. A return to baseline is the desired result of a recovery plan. A completed variance analysis report is a good starting place for the recovery plan.

When completing variance analysis reports, ask these questions:

- What is the variance?
- What caused the variance?
- What is or could be the impact on the project?
- What is the planned corrective action?
 - Specific plan, with milestones
 - Responsible person
 - Milestone completion dates

A solid plan of recovery must be established, as recovery at a later date is nearly impossible. The project manager must ensure that a person is assigned to the task of leading the corrective action, and must make the recovery plan part of the weekly status review.

Problem Resolution Strategies

Problem resolution strategies can be simple to complex, depending upon the problem. Project variables of cost, schedule, and scope and quality can be negotiated with the customer. There is usually one element about which stakeholders may be flexible in accepting changes. This can be exploited to the benefit of the project.

The key to altering the variables is to keep the customer involved in the problem-resolution process. Remember that customer satisfaction is usually one of the quality metrics.

Examples of problem resolution strategies include:

- **No action required;** accept non-critical variance.
- **Schedule variances**
 - Alter schedule dependencies to get back on schedule.
 - With cooperation of customer, extend the project to cover slip in schedule.
 - Use the management reserve and assign additional resources.
- **Cost variances**
 - With cooperation of customer, alter scope and quality or schedule.

Revising the Project Baseline

Once the project status has been analyzed and clear trends have been established over several reporting periods, it may become advisable to revise the baseline.

Such a decision is not reached easily or very often. The point of the baseline is to illuminate areas of performance variance. Changing the baseline to correct variances would be counterproductive.

If, however, attempts to correct the performance problems do not have a significant effect, and if the variances continue to worsen, the project manager should seek concurrence of the sponsor and key stakeholders to revisit the project management plan. This decision should be supported by a clear understanding of the variances and the dynamics of the project that are limiting the effectiveness of the corrective actions.

Usually the decision to rework the project's baseline is accompanied by discussions about renegotiating scope, budget, and schedule expectations.

Get a copy of a project management references book using the internet link shown below :

<https://www.dropbox.com/s/60cik9szolqx8qt/PM%20REFERENCES%20IM.pdf>

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Internet Links to useful information I

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https://www.dropbox.com/s/azkjs6nar65zqzt/OPM3_Pr.pdf

Planning& Scheduling Excellence Guidelines (PASEG)

<https://www.dropbox.com/s/132mlkdl09ujhmm/PASEG.pdf>

Check List for Capital Projects

<https://www.dropbox.com/s/ukcoyn2jujy3yke/CHECKLIST%20FOR%20CAPITAL%20PROJECTS%202011.xlsx>

Project Management Workbook

<https://www.dropbox.com/s/vxf2gd08v40xoti/PROJECT%20MANAGEMENT%20WORK%20BOOK%202012.xlsx>

Systems Engineering

<https://www.dropbox.com/s/0lrvn4lig8937n4/SYSTEMS%20ENGINEERING.xlsx>

Construction Claims Library (1)

<https://www.dropbox.com/s/trkydr81rhx3x1/CONSTRUCTION%20CLAIMS%20ARTICLES%20LIBRARY.pdf>

Construction Claims Library (2)

<https://www.dropbox.com/s/hzjnujjaiyzczst/CONSTRUCTION%20CLAIMS%20CASE%20LIBRARY.pdf>

Cost and Schedule Control System Criteria (CSCSC)

<https://www.dropbox.com/s/fizmscwr2tulxnt/COST%20AND%20SCHEDULE%20CONTROL%20SYSTEMS%20CRITERIA%202008.pdf>

Partnering Agreement Guidelines

<https://www.dropbox.com/s/wmfjlia4q8eh7k/PARTNERING%20AGREEMENT%20GUIDELINES%201.docx>

Negotiate to a Win

The skilful negotiator is the person who moves ahead in the business world. He or she has a skill that today is used in everything from getting a raise to delegating an unwanted assignment to reaching a manufacturing agreement worth billions.

In Getting to Yes, Roger Fisher and William Ury caution that negotiation is not a matter of making concessions or butting heads. They call for principled negotiations - deciding issues on their merits. When you bargain over positions, you get locked in and get sidetracked from meeting both parties' concerns. Agreement is less likely.

Four Negotiation Points

Principled negotiation has four basic points:

1. Separate the people from the problem, the relationship from the substance of the negotiation. Try to view the situation from the other person's perspective and provide opportunities for both of you to express your emotions. Pay attention, listen, and do whatever you can to build a working relationship.
2. Focus on interests, not positions. You know your interests, the ones that have caused you to take your position. Now try to figure out the other parties'. Acknowledge their interests; give the people on the other side positive support equal in strength to the vigour with which you emphasize the problem.
3. Invent options for mutual gain. Then broaden your options, looking for room to negotiate. Look for mutual gain by identifying shared interests. These opportunities exist in every negotiation. Stress them to make negotiations smoother and more amicable. Make the other person's decision easy. Look for possible agreements early in the process.
4. Insist on objective criteria. That takes advance preparation and evaluation of alternatives.

Frame each issue as a joint search for objective criteria as if you assume the other party is doing the same thing. Reason soundly and be open to reason. But yield only to principle, not pressure. When you feel pressure, invite the other side to state its reasoning. Then suggest objective criteria, and refuse to budge except on this basis.

Problem Negotiations

Sometimes, Fisher and Ury note, you are not negotiating on a level playing field. The other side may be richer, better connected, with a larger staff, have more powerful weapons. You can't change that, but you can protect yourself from making a bad agreement.

Before negotiations start, know the worst outcome you will accept. Keep that in mind as your bottom line. At the same time, make the most of your assets. Know what you'll do if the negotiations fail. Be willing to break off negotiations if you can't reach an acceptable agreement.

You may encounter opponents who won't bud-e from their positions. Do not push back. Silence is your best weapon. It can create the impression of a stalemate, which the other side will be impelled to break- by offering something different.

Do Your Homework

More advice is offered by David D. Seltz and Alfred J. Modica in *Negotiate Your Way to Success*.

Never lose sight of the fact that settlements are negotiated because they are beneficial to both sides. Before you enter the negotiation do your homework, including these steps:

- **Research.** Amass factual information to back up the case you want to make.
- **Psychological detective work.** Think about your adversary. Likes? Dislikes? Flexible? Narrow-minded?
- **Self-evaluation.** What are your strengths and weaknesses?
- **Plan your strategy.** What will happen if you get what you want'? When, where, and how will the negotiations be scheduled?
- **Practice.** Actually rehearse the negotiations, using another person as the devil's advocate.

Setting the Stage

Leave nothing to chance. One of the most basic details is the place and time of the negotiating session. A neutral location is preferable. A "home team" always has an advantage that makes the visitors resentful and is a detriment to a successful negotiation.

Keep the meeting free of distractions. Best time? Most individuals are at their peak efficiency at about 11 a. m. Early in the week is better, too. Never negotiate on Friday. People are thinking about the weekend.

Commitment: the Vital Factor

Start by identifying the committed parties, the person or persons in position to sit down with you and negotiate. If one is obviously not right, broaden the discussion group to include others. And remember that commitment and negotiation are not inevitable. Sometimes the opportunity to negotiate is just not there.

Dressing up the Negotiations

Use props and personal attitudes to dress up your negotiations and build credibility and impact. Start off with an air of formality. It gives you room to maneuver that you lose if you open more casually.

Use some sort of prop to help you to control the pace of the session. Carefully prepared research notes, blank legal pad and pen, videotape, or audio tape will help.

Hand your adversary something - a photocopy of your material, perhaps - that captures his attention and allows you to lead the conversation.

Consult a special prop, such as an expert or consultant in your field of endeavor

Using Leverage

Leverage is the ability to get multiple benefits from your assets. Truthful self-evaluation is the key to the successful use of leverage.

If you have a certain character, admit it and use it to your own advantage. Glenn W. Turner, who built a quick empire with his "**Dare to be Great**" organization, started with a serious problem for a door-to-door salesman - a distinct and glaring harelip. He capitalized on it. "I see you are looking at my harelip, ma'am," he said to prospects. "Heck, it is Just something I put on this morning so a pretty lady like you would notice me."

Use leverage to maximize your efforts. Do not waste it in unproductive gambits with your adversary. Many people when negotiating for a job begin with two strikes against them because their resume includes too much that is not applicable to the job. Be selective. Negotiation is communication. Don't confuse the main issues by heaping on irrelevant factors.

Never abuse your adversary. You'll get a lot more by using "I really wish I could afford to pay you what this fine old house is worth than with "This old junk pile is about to fall over, and it will take a lot to get it in shape, so here is my top offer."

For every gain you make, give something back in return, even if it is little more than a formality.

It is important to you to have clearly in your mind what you want and what you can afford to give up. *The shortest distance between two positions in negotiations is never a straight line.*

Keep It Simple

The successful negotiator is an expert at clarifying and conveying a point of view to an adversary.

Never be afraid of offending someone with simplicity.

First, break up your discussion into compact and understandable little bites of information and begin to chew on them with your adversary. Next, let your adversary swallow and digest. But don't take on faith that all key points have been communicated. Keep returning to them. *A little redundancy will not hurt.* Most individuals actually enjoy hearing information they have just learned.

You are Succeeding

There are five key signs that negotiations are turning in your direction:

1. Fewer counterarguments.
2. Both sides' points are closer together.
3. The other person talks about final arrangements.
4. The other person extends a personal invitation to you and your spouse.
5. The other person is willing to put the agreement in writing.

Cement the completed negotiations by meeting to sign. *Never put the formal agreement in the mail.*

Be a good winner. *Do not brag.* You are in the game for the long run. Send the other person a thank-you letter noting that you look forward to a long working relationship.

International Negotiations

Jack Nadel, who wrote *Cracking the Global Market*, is a veteran of years of negotiations, here and abroad. His advice on the subject is down-to-earth and practical, and it applies both to the international field and to the most simple of deals.

His thinking differs in marked fashion from the authors we just quoted. His first guideline is: ***"Get away from the other side of the desk."*** This means ridding yourself of an adversary role. The reality is that you have a mutual problem which you are going to solve to your mutual advantage. Your intention and the intention of the person with whom you are negotiating must be to structure a deal that resolves the problem and gives each of you what you want.

It is not always possible. When it can't be done, it is better to make no deal than to make a poor deal.

Much of your work must be done before you approach the negotiating table. You must learn all you can about what you want to accomplish, the product, the market, and the people with whom you will be negotiating.

Visualization

Visualization is a technique you can use that can spell the difference between success and failure. It means acting out in your mind the logical actions of what you are going to do - before you do it.

"I first complete all of my homework on the deal," Nadel says. Then I turn on the screen in my mind. I see myself entering the room where we will negotiate. I see the people, and we introduce each other and start our conversation.

"I run the tape all the way through to the end - through the objections, the price levels, the counteroffers, the reactions, the teasing, everything. I do the entire meeting in my mind."

Note that this is not just thinking about the meeting. It is going through it in your mind. Then, when Nadel goes into the real meeting, it is as if he were entering it for the second time. He says that most of the time he is 60 to 70 percent right as to what happens. That gives him an enormous advantage.

It has had different results for him. Sometimes he is gone through the visualization, felt lousy about it, and passed on the deal.

Starting the Negotiations

Nadel has a formula for starting negotiations. Get the other person to answer this question: *"Look, if you could write the script for the deal that you want, what would you write?"* Sometimes that person will ask for less than what you are willing to pay.

Do not be greedy. That's trying to wring the last drop of blood out of someone in negotiation. *It can blow deals, destroy relationships, and ruin businesses.* It is totally unnecessary, too. If there is not enough fair profit in the deal for both, move to something else.

Make Meetings Worthwhile

Meetings are a fact of business life, but most of them are frustrating and time-consuming. The results are rarely worth the time and effort of the many people involved.

Yet meetings are a sensible way to handle many kinds of discussions., problem-solving sessions, presentations, and general updates on what's happening.

If you learn to plan, structure, and participate in meetings effectively, you will be able to improve your own time management and productivity as well as that of other participants.

Room for Improvement

And there is a lot of room for improvement. In *We've Got to Start Meeting Like This*, authors Roger K. Mosvick and Robert B. Nelson reported on a poll of managers and professionals to identify the specific problems of meetings.

These participants listed 1,305 problems. The top one was that meetings too often get off the subject. *Other problems were no goals or agendas, too lengthy, poor or inadequate preparation, inconclusive, disorganized, and ineffective leadership/lack of control.*

Less than 10 percent of all meetings have agendas, say Listen!! author Thomas E. Anastasi, Jr. But an agenda is essential if participants are to prepare for meetings by gathering relevant information.

Even better is a timed agenda that tells participants in advance that they will deal with topic A from 9 to 10, topic B from 10 to 11, and so on. That way, participants can attend only at the times when they can contribute and benefit.

Before the Meeting

If a meeting is to be effective, preparation must start long before the meeting leader greets the participants. Determine the purpose of the meeting. But before you set the date, consider the other available communications media. If the most effective is a meeting, follow these guidelines. If not, forget the meeting and use another more effective medium.

Select the participants on the basis of their abilities to contribute to and profit from the meeting. If participation and discussion are important - and they are - limit the number of participants to five or six. It is difficult for a dozen or more people to participate effectively in a discussion.

Prepare a draft agenda. List the items the meeting can usefully discuss, and the times allotted to each topic. Circulate this draft agenda to the participants, and set a firm return date for comments.

Prepare the Firm Agenda

Having received the comments on the draft agenda, prepare the firm agenda. Include the topics to be discussed, the date, time, place of the meeting, a list of participants and their functions, and, to help manage the distracting interruptions for your meeting, an indication on how messages will be delivered to participants during breaks in the meeting.

Arrange the logistics. These include the room, any, necessary audio-visual support that is needed, and the amenities such as ashtrays, pencils, note paper, water, and glasses. Also arrange for coffee breaks and meals, if necessary.

If persons from out of town will participate, coordinate travel and hotel arrangements.

Prepare sufficient copies of any documents to be used at the meeting. If the flow of the meeting would be smoothed by an advance reading of such documents, send them to participants.

Name a Leader

Select a meeting leader on the basis of ability to make the meeting work. Select someone else to take notes, if this is necessary. Prepare an attendance sheet, not to record truancy but to help the notetaker prepare the meeting minutes.

At the Last Minute

Just before the meeting, check on the documents you will hand out. Visit the site in advance to make certain it is ready. Set up and focus any audio-visual equipment.

Conducting the Meeting

Start on time. The people who are on time deserve this courtesy. It assures all participants that this will be an orderly meeting which deserves their listening attention.

If participants do not know each other, introduce them by name and function. Name badges may help. The badges can be prepared in advance, or the participants can write their own names if given blank cards and felt-tip markers.

Tell the participants where they can find rest rooms, a coffee machine, telephones, and whatever else they may need. This promotes listening, since participants will not be wondering about these things later when they should be listening.

Review the agenda. Reinforce the purpose of the meeting. Modify the agenda as needed to take care of any last-minute developments.

Summarize Action

As you move into consideration of the agenda items, summarize and note action items or agreements.

Keep your eye on the clock and match the meeting's pace with the time available. If people know that your meeting will start and end on time, they won't be distracted by worry that the meeting will run overtime.

End on time.

After the Meeting

Prepare the minutes promptly. Minutes are not a transcript. They should be concise, giving the meeting date, time, place, and purpose, the names of those who attended, any conclusions, agreements, action items, or assignments. They may also list open items.

The minutes should not try to summarize the discussion or point out who said what and who disagreed with whom.

Finally, review the meeting in your own mind. What did you learn that would be useful in planning, conducting, and following up other meetings?

The Planning Process

Roger K. Mosvick and Robert B. Nelson go even deeper into the meeting planning process.

They recommend writing down the purpose of the meeting in one clear sentence, the expected outcomes in another. For example: "To decide on a marketing plan and determine implementation responsibilities for everyone in the group. To be completed by July. "

Meeting Formats

Meetings usually have one of these formats:

Consultation. This is for an ad hoc group, usually called on short notice and for a specific decision. Supervisors call them to get input on a problem. The supervisor should listen as much as possible. Participant input is spontaneous, usually without the benefit of long consideration. The supervisor chairs the meeting and clearly is responsible for the final decision.

Recommendation. This meeting is more formal, lasts longer, and features independent deliberations by the group. The manager meets with the group to outline the problem, then leaves the group to conduct deliberations. It is clear that while the group will choose its own leadership and decision process, the manager retains final decision power, and can reject all recommendations.

This meeting is particularly valuable in companies where convening supervisors come and go, so committee members take their assignments seriously.

Delegation. The manager delegates complete decision-making responsibility to a group of trusted subordinates. Such meetings are less frequent because managers fear they will lose control. There is no more powerful demonstration of trust and respect than the delegated decision. Once this course is taken, the manager must let the group work out the solution without intervention or later modification. One of the worst errors a manager can make is to delegate a decision, then intervene in the decision process.

No matter which format is selected, the manager should report back to the committee on the final decision.

Planning Checklist

Here is a checklist prepared by *Mosvick and Nelson* to help meeting planners:

- Write the purpose and general objectives of the meeting;
- Select the type of format and leadership style;
- Decide who will attend;
- Select a chairperson;
- Decide how and when participants will be notified of their tasks;
- Pick the time, place, and duration of the meeting;
- Compose an agenda;
- Name a recorder to report on results;
- Decide who will have responsibility for implementation steps and action items.

Leading a Meeting

The successful meeting leader or chairperson is the person who can adapt leadership styles to different groups, different members, and different tasks. The failure is the person who uses one role, usually authoritarian, when the group expects another.

Much of the role of the leader is linked with the purpose of a meeting. Meeting to inform subordinates of a decision calls for one approach; a completely different one is needed if the meeting is to gain their commitment to carry out a decision made by others.

Decision-Making

Managers call most meetings to gather informed opinions from expert subordinates or colleagues to help make decisions for which the manager is responsible. Managers need to tap the expertise of their subordinates and to use them as sounding boards for the managers' ideas.

In this situation, managers who overemphasize their own contributions do more harm than good by inhibiting the contributions of the others.

Leaders should consider participants as equals, each to be respected for having information and judgment at least equal to and often superior to the leaders. This attitude sets an appropriate tone for the meeting.

A strong leader often errs by not being willing to share chairperson functions and by reacting sharply to perceived dominance by group participants. This style may be appropriate when meeting procedures and mechanics are discussed, so the chairperson can monitor and direct progress, but if used in other areas, it will discourage creative contributions.

Dissent is Essential

Effective leaders recognize that dissent is essential. The purpose of many meetings is to scrutinize ideas in order to reach the best decision possible. The alternative is the agreement of "yes-men" who withhold negative information.

Group leaders need to make it plain that disagreement and constructive criticism are encouraged and expected in group deliberations. It is the only way to achieve free and open participation in decision-making. One of the best techniques used by chairpersons to accomplish this is to refuse to take sides in a dispute until all evidence is presented.

Leaders must make absolutely clear the roles of participants in decision making. This means spelling out whether any committee conclusion is a recommendation or a decision. To do otherwise invites bad feelings and plummeting morale.

Managers jealous of their rank have been known to shift goals in the middle of a committee's work, or to fail to give any feedback to a group about its recommendations. Such practices are fundamentally bad management.

Orientation Speech

The chairman should kick off the meeting with an orientation speech lasting from three to five minutes. This should serve as the foundation of the entire decision process. It also orients the group on the meeting's purpose and procedures, provides an information base, and reaches clear agreement on how the group can proceed.

A good orientation speech can cut meeting time in half and increase the probability of a better decision.

Checklist for Speech

Here's a checklist to use when preparing your orientation speech:

- State the problem, general objectives, and procedures;
- Provide the information base, including present status and consequences if not resolved;
- Define the territory, the topics you'll discuss and the boundaries of the discussion. Set criteria for a good solution;
- Review the agenda, then ask for any changes; and
- Appoint a recorder, (who knows of this in advance) and explain the recorder's role.

While it takes time to prepare this speech, it does not take half as long as a meeting that gets off track.

Chairman's Responsibilities

As chairman, you have certain responsibilities during the meeting. By carrying them out, you will do much to insure the success of the meeting.

- Start on time;
- Build a permissive climate;
- Follow the agenda;
- Give or get accurate summaries;
- Give or get clarification of vague statements;
- Encourage evaluation of all generalizations;
- Protect the expression of minority opinions;
- Minimize conflict over issues that have nothing to do with the meeting;
- Try to reach a consensus on all conclusions;
- End the meeting by reviewing accomplishments, answering questions and specifying actions to be taken, and by whom; and
- End the meeting on time.

The Participant's Role

Your role as a meeting participant isn't a passive one. You should prepare for the meeting, and then have something to offer. You should be prepared to influence the group effectively and manage conflict if it arises.

If you have been told about a meeting, but haven't received an agenda, ask the chairperson for one.

Conduct research into problems that will be discussed so that you can offer stimulating, well-grounded views. If you are strongly involved in the problem, try to sell in advance your ideas to other group members.

There is much that you and other participants can do to make a meeting more successful.

First, organize your contributions. Think before you speak. If what you will say is complicated, rehearse it before the meeting. Make one point at a time. Speak clearly and forcefully, offering valid evidence rather than vague statements.

Listen to the discussion. Then speak when your contribution is relevant. If the conversation has moved past your point, don't try to backtrack. And when you are listening, monitor your non-verbal signals. Facial expressions can speak volumes. So can yawns and doodling.

Project Risk Management tools

Risk Inventory 1:

POLITICAL	PROGRAMME	CONTRACT
Government Support	Contingency Planning	Confidential Information
War / Insurrection	Risk Assessment	Evaluation Criteria
Sabotage / Terrorism	Logistic Schedule	Marketing Decisions
Civil Disorder	Quality Assurance	Material Pricing
Government Contract Breach	Key Performance Indicators	Technology Availability
Government Change	Non-Optimal Capacity	Engineering Complexity
Revolution	Project Phasing	Partnership Agreement
Racial Conflict	Progress Measure	Project Completion Timing
Electoral Reform	Flexibility	Payment Cycle
Pressure Groups	Integration	Project Costing
Permissions	Facilities	Partnership Sourcing
Legislation	Experts	Contract Award Schedule
Nan-Saudi Political Issues	Testing	Reserve Categorization
	Surveys	Debt Payment
	Operability	Contractor Solvency
		Contractor Delay
		Permit / Licensing
		Multiple Contracts

Risk Inventory 2:

COMMERCIAL	PHYSICAL	RESOURCES
Supply Security	Resource Availability	Succession Planning
Project Magnitude	Climate Change	Staff training
Implementation Schedule	country	Training non-locals
Supply disruption	Time Zone	Global skills Demand
Supplier Contingency Planning	Weather	Training Programme Timing
Projected Reserves	Altitude	Staff Retention
Monopolization / Domination	Humidity	Resource Security
Competition	Earthquake	Local Labor Supply
Project Feasibility	Wind	Resource Capabilities
Raw Material Supply	Precipitation	Staff Attraction
Logistic Access	Force Majeure	Language
Commodity Pricing	Ecology	Industrial Relations
Site Selection	Erosion	Terms & Conditions
Funding Availability	Subsidence	Relocation
Cost Overrun	Biological Hazard	Literacy
Theft		
Fraud		
Insurance		
Payment Terms		
Economic Stability		

Risk Inventory 3:

ENVIRONMENTAL	MARKET	ECONOMIC
Project Implementation / Operation	Information Leak	Non-Governmental Organizations
Waste Disposal	Transactional Misconduct	Seasonal Variation
Discharge	Negative Market Publicity	Capital Costs
Chemical Pollution	Partner Preference	Product Price Variation
Radiological Pollution	Illegal Acts	Currency Fluctuation
Noise Pollution . Equipment	Product Failure	Tax
Equipment Certification	Quality Standard	Royalties
Preservation Policies	Business Recovery Procedure	Interest Rate Fluctuation
Pressure Groups	Crisis Communication	Credit Enhancement
Emissions	Marketing	Global Recession
	Language	Pension Requirements
		Growth Rates
		Monetary Policies

Risk Inventory 4:

SOCIAL	TECHNOLOGICAL	MANAGEMENT INFORMATION
<p>Cultural Conflict</p> <p>Skill emigration</p> <p>Higher Education</p> <p>Unskilled Emigration</p> <p>Ageing Population</p> <p>Insurgency</p> <p>Population Policies</p> <p>Religious Growth</p> <p>Religious Shift</p>	<p>Point of Failure</p> <p>Plant Integration</p> <p>Plant Processing Lines</p> <p>Operational Costs</p> <p>Infrastructure</p> <p>Lifestyle Shift</p> <p>Maintenance</p> <p>Technology Creep</p> <p>Performance Efficiency</p> <p>Shared Services/Infrastructure</p> <p>Design Capacity</p> <p>Inappropriate Technology</p> <p>Operational Lifetime</p>	<p>Decision-making</p> <p>Document Management</p> <p>Project Management Planning</p> <p>Project Implementation Planning</p> <p>Change Management</p> <p>Delegation</p> <p>Risk Appetite</p> <p>Increased Project Momentum</p> <p>Fixed Assets</p> <p>Management Competence</p> <p>Quality of Information</p> <p>Quantity of Information</p>

Risk Inventory 5:

EXTERNAL ADVISOR	LEGAL / REGULATORY	COMMUNICATION
Intellectual Property Loss Inexperienced Advisors Advisor Availability Advisor Conflict Unauthorized Communication Language Recommendation Acceptance External Affiliation	Health & Safety Policies Environmental Impact Assessment Emissions Control Royal Commission Compliance Foreign Investment Regulation Intellectual Property Infringement Site Acquisition	Knowledge Sharing Policies & Procedures Documented Instructions Reporting Structure Regulatory Reporting Inaccurate Content Misinterpretation Language Categorization Probability / Consequence

Risk Inventory 6:

TECHNICAL	INFORMATION TECHNOLOGY
Design Specification	System Failure
Internal Control	Inappropriate systems
Technical Knowledge	Hardware / Software Contingencies
Research & Development cost	Human Error
Licensing	Technological Lifetime
Interfaces	Technological Interaction
Modifications	Documented Procedures
Inspection / Testing	Inspection / Testing
Authorization	Maintenance
Working Conditions	Research & Development
Facilities	Future Systems Requirements
Utilities	
Security	
Access	
Damage / Loss	
Supervision	
Change Control	
Reliability	

Risk Control Effectiveness

RCE	RCE Rating	Description	Probability
20	Less Than 20%	Practically no or poor controls in place	0-20%
30	20 - 30%	Just getting started/ a lot of work still to be done	20-50%
60	50 - 60%	About half way there	50-80%
80	75 - 80%	Most things in place and working, but some work still to be done	80-100%
90	Greater than 90%	Nothing more to be done except review and monitor the existing controls	

Definition:

Is the actual level of control (that is currently present and effective) expressed as a percentage of that reasonably achievable for that particular risk issue.

RISK SCORING CRITERIA 1

Impact

Impact	Finance	Community / Government / Reputation / Media	Health & Safety	Legal	Environment
Severe	> USD\$ 500M	International media condemnation	Multiple fatalities	Very significant fines and prosecutions. Prolonged multiple litigation	Very serious impact on highly valued species, habitat or ecosystem.
Significant	USD\$ 100M to USD\$ 500M	Serious public or media outcry	Single fatality or multiple major injuries	Significant prosecution and fines. Very serious litigation including class actions.	Very serious long term environmental impairment of ecosystem function
Moderate	USD\$ 5M to USD\$ 100M	Significant adverse media attention	Multiple lost time injuries or single major injury	Major breach of regulation. Major litigation	Serious medium term environmental effects
Minor	< USD\$ 5M	Local adverse media complaints	Single lost time injury	Minor legal issues, non-compliances and breaches of regulation	Minor effects on biological or physical environment

RISK SCORING CRITERIA 2

Likelihood

Likelihood	Definition	Timeframe	Probability
Highly Unlikely	Unlikely to occur but not impossible	This risk is extremely unlikely to occur but may do so in at least 10 years time	0-20%
Possible	Less likely than not to occur	This risk is likely to occur and may do so within the next 3-10 years	20-50%
Probable	More likely to occur than not to occur	This risk is likely to occur at least once every 1-3 years	50-80%
Very Likely	Very likely though not certain to occur	Very likely to occur in the next 12 months or is occurring at present	80-100%

Recommendation for Additional Contracting Clauses

The following is a contract supplement covering the minimum requirements for project control to be prepared and maintained by the contractor.

Scope

The contractor representatives shall attend planning, scheduling and coordination meetings to interface with the COMPANY and other contractors to identify and resolve critical contracting and scheduling issues.

A kick-off meeting will take place at the contractor's project control office where the following activity will take place:

- Introduction to the contractor's professional staff;
- Inspection of software and equipment requirements;
- Bid schedule verification;
- Contract Execution Master plan presentation;
- Integrated Master Schedule development plan;
- Performance measurement protocol;
- Baseline changes procedures;
- Performance measurement protocols; and
- GASP and PASEG conformance agreement.

Proposed revisions to previously agreed schedules shall be submitted to the COMPANY at least 48 hours before the meeting where they are suppose to be discussed.

These revisions shall be accompanied by complete documentation related to the proposed variations. The meeting shall be held at the work site or at a designated place as directed by the COMPANY representative.

Types of schedules

Project milestone schedule

The contractor shall submit to the COMPANY, within 30 days of contract award, for its review and approval, a proposed project milestone schedule showing definitive plans for execution of the contract.

This approved schedule shall be the contractor project milestone schedule and shall be used to plan, organize and execute the work, record and report actual performance and progress, and show how the contractor plans to complete all remaining work as of the end of each progress report period.

The schedule shall be in the form of an activity oriented time scaled network diagram (using the critical path method) and the principles and definition of the terms used herein shall be as set forth in the generally accepted scheduling principles (GASP) and the planning and scheduling excellence guidelines (PASEG). Subcontracted activities shall be identified by the name of the subcontractor and their schedule should be integrated in the master schedule.

The project milestone schedule shall identify critical milestones mentioned in other part of this contract. The project milestone schedule shall be updated and reissued for approval on a monthly basis.

The project schedule shall reflect working development of design workshop drawings, procurement approvals and purchasing lead times, the construction sequencing, tie-ins and the required shutdowns if any as generally described in the job specifications.

Summary schedule

The contractor shall develop a detail engineering, procurement and construction summary schedule within 30 days of contract award. These schedules will establish the control points reflected in the project milestone schedule referred to in a paragraph above. The format for the summary schedule shall be that of a time-scaled network. Major constraints and interdependencies shall be shown.

As a minimum the following should be identified:

1. Start and completion dates for each engineering discipline and approval/release of critical drawings for procurement and construction.
2. All long lead critical material, major equipment and bulk materials, showing the procurement of these items and how they support the construction schedule.
3. The contractor site mobilization and start and completion dates for all major construction activities.
4. All activities to be performed by subcontractors including the contract award dates.
5. Budget weightings against each line item of engineering, procurement and construction works matching with the tender bill of quantities and the work breakdown structure.

The summary schedule shall be updated monthly.

EP schedules

Engineering/Procurement schedules by major facilities shall be prepared to expand activity detail represented in the project milestone schedule and other schedules.

Construction mobilization schedule

The construction mobilization schedule shall be prepared 30 days prior to arriving at jobsites. The plan shall consist of a full layout of all temporary facilities and the utilities required, manpower and equipment required to complete mobilization, and organizational charts depicting key personnel along with the appropriate CVs.

Construction summary schedule

A construction summary schedule shall be submitted at least 30 days prior to arrival at jobsite to cover the overall duration of the construction segment of work and show the interface with engineering, procurement and fabrication via issue of drawings and delivery of equipment. The construction summary schedule shall be time-scaled and shall be developed within the parameters of the milestone schedule and the engineering/procurement/fabrication/construction schedules

90-day look ahead construction schedule

A construction 90-day look ahead schedule shall be prepared from the criteria established by the construction summary schedule. It shall be prepared as a time-scaled barchart format showing major constraints. It shall be inclusive of work planned in a geographical area during the time span designated. The 90-day schedule shall indicate all resources required to meet the plan, including manpower allocation by craft, heavy equipment, materials, equipment deliveries, and engineering drawing interfaces.

Construction weekly work plans (WWP)

The weekly work plan (WWP) shall be prepared in detail for all the resources required and quantities of work to be completed to achieve interim milestone dates. The activities on the weekly work plan shall be consistent with those on the 90-day look ahead schedule. The forecast work for the week shall be broken down by day, showing the total weekly resources quantities.

Each week a construction meeting shall be convened to discuss the upcoming week's work and review progress of previous week. The weekly work plan shall form the basis for all discussions and therefore shall be presented in a bi-weekly format.

Construction equipment schedule

The contractor shall prepare a construction equipment schedule identifying each type of major equipment and the quantity by month over the life of the contract. The submission shall be correlated to each activity of the construction summary schedules. The construction equipment schedule will be updated monthly by the contractor and include equipment actually used as of the report period and the equipment required to complete the remaining work.

Equipment shall adhere to jobsite safety requirements and any required permits and certificates shall be recorded with each piece of equipment.

Progress Reporting Curves

Each progress report should include a minimum of the following:

1. Highlights of significant accomplishments during the report period, expressed in relation to the total of work to be done in each category.
2. Current status of the work. Project progress information shall be provided in the form of a monthly project update report as instructed by the COMPANY representative and graphs showing actual versus scheduled progress for:
 - Detailed engineering;
 - Requisitions issued;
 - Materials commitment;
 - Materials received at site; and
 - Accomplished field construction
3. Explanation of deviations from the target schedules, their consequences and corrective actions to be initiated shall be given.
4. Problems, along with actions taken to solve them.
5. Highlights of significant work items anticipated to be completed in the succeeding month.
6. Execution of action items as identified for the reporting period.
7. Status of subcontracts.
8. Photographs of the site to indicate construction progress.
9. Status of disputes.
10. Input for manpower reports.
11. Areas of concern

Management review report

The management review presentation should cover the up-to-date status of the project scope, schedule, project interface, detail engineering, procurement, construction, pre-commissioning and start up. The presentation should be depicted graphically and shall include a minimum of the following:

1.- Major milestones and major milestones schedule

These two charts highlight the overall schedule and its forecast. The major milestones chart is a listing of the project milestone with a tabulation of the scheduled, actual and forecast dates for each. The major milestones schedule chart lists the key engineering, procurement and construction activities and duration required to support the milestone.

2.- Engineering percent complete

This chart represents the engineering progress by month. It is a series of 'S' curves denoting scheduled, actual and/or forecast progress.

3.- Status of major engineering office functions.

This is a schedule presenting the status of the following items:

- Shop drawings production and approval process;
- Material requisitions, their approval and delivery to site lead time; and
- Purchase orders approved and placed to date.

4.- Procurement status

This chart represents, in percentage, the status of material requisitions issued for bid and purchase orders placed. It is a series of 'S' curves denoting schedule, actual and/or forecasted progress. Progress should reflect design, manufacturing, and transportation activities or stages of material procurement.

5.-Fabrication and construction status

This is a barchart representing the key fabrication and construction activities and duration. The activities included are major disciplines e.g., civil, structural, piping, electrical and subcontracts.

6.-Overall plan/progress/forecast for engineering, fabrication and construction.

This chart represents the total project plan. It relates engineering to construction progress and indicates the major milestones. It is a series of 'S' curves denoting schedule, actual and/or forecast progress and showing tests and inspections compliance activity.

7.-Contractor concerns.

This chart is a listing of contractor concerns regarding the contractual responsibilities such as: scope variations, man-hour/manpower control, productivity, schedule variations/delays/recovery, etc.

Manpower requirement forecast

The contractor shall prepare a construction manpower requirements forecast in the form of a series of graphics displays depicting manpower by the following categories and in accordance with the construction summary schedule:

- Non-manual;
- Manual;
- Manual and non-manual summary; and
- Manual by craft.

The graphs shall display the number of men by month, over the life of the contract. This submission shall be correlated with the manpower assigned to each activity of the construction summary schedule.

A computerized analysis is required. The manpower requirements forecast will be updated monthly by the contractor and include manpower actually used by trade as of the report period and the manpower required to complete all remaining work.

Schedule variation approval

A.-Revisions to the project milestone schedule baseline shall only be made to reflect the impact of variation orders and addenda. All proposed revisions to the project baseline schedule shall be clearly identified and highlighted, and the reasons for each revision proposed shall be detailed by the contractor.

All such proposed revisions shall be subject to approval by the COMPANY representative. The COMPANY representative shall review and approve or disapprove any request for such a revision within ten (10) days after submission of a documented request by the contractor.

B.-When variation orders or addenda impact the project milestone schedule, or delays are experienced by the contractor, the contractor shall submit to the COMPANY representative a schedule analysis depicting the influence of each such variation order, addendum or occurrence of delay on the critical milestone date(s) and the schedule completion date.

Each analysis shall include a network demonstrating how the contractor proposes to incorporate the variation order or addendum into the project milestone schedule and how delays not directly attributable to a variation order or addendum are proposed to be overcome by the contractor.

The analysis shall demonstrate the time impact based on the:

- Date the variation order is issued, the addendum agreed or delay encountered;
- Status of the work at that point in time; and
- Event/time computation of all affected activities.

This shall agree with the latest update copy of the contractor's detailed progress report. Networks of proposed revisions which result from variation orders and addenda and which are approved by the COMPANY representative shall be incorporated into the project schedule during the first revision after agreement is reached.

C.- If a variation order does not set forth the agreed time impact of a variation because this impact is "to be negotiated", the contractor shall use its best efforts to estimate the time impact in its proposed revision to the project schedule and, subject to COMPANY's representative concurrence, the contractor's estimate shall be used on a provisional basis for project scheduling purposes.

However, such use shall not constitute agreement as to the definitive time impact of the variation, and shall in no way prejudice the right of either the COMPANY representative or the contractor to negotiate the agreed time impact for that variation thereafter.

A "to be negotiated" scenario should be developed at the time when the impact is claimed and it should be fully documented to allow future executive decisions with verifiable data.

Schedule control

A monthly analysis of the project milestone schedule shall be made by the contractor and submitted to the COMPANY representative with particular emphasis on the critical and sub-critical paths. The conclusions of this analysis shall be covered in the monthly progress report to be prepared by the contractor and this report shall, as a minimum include:

- Narrative highlights of any variations over the status of the previous month;
- Special actions recommended or being implemented to maintain or improve schedule; and
- Outlook for activities to be started or finished.

Reporting

In addition with the reports outlined above, the contractor shall maintain progress curves (planned versus actual performance) for each engineering discipline (project, process, instrument, electrical, piping, civil, etc.) and for each field craft (millwrights, pipefitters, welders, etc.) by major area of work.

Progress shall be measured by physical measurements of work completed. The progress curves shall be available for review by the COMPANY's representative on request.

Schedule submission non-compliance

If the contractor fails to submit the project schedules or manpower requirements forecasts, or revisions thereof within the required time, the COMPANY shall be entitled to withhold payments otherwise due until the contractor submits the required information.

Schedule coordination

The contractor shall coordinate work under this contract with other contractors working in the same general area. Prior to developing the schedule and continuing throughout the time frame of the work, the contractor shall plan and coordinate all work activities directly with all other contractors and determine concurrent activities which may impact the work. The contractor shall throughout the performance of the work make every effort to coordinate activities so as to minimize interference and delays.

The schedule and all revisions thereto shall clearly indicate such areas of interference and/or delays which have not been resolved between the respective contractors.

The contractor shall submit with the schedule an analysis of alternatives, cost estimates of each interference and/or delay situation, and complete documentation demonstrating impact on present schedules, future work events and on other contractors as well as sequence sketches illustrating the problem areas. These documents shall include minutes as approved by the COMPANY's representative of all meetings between contractors whereby the situations and their alternatives were discussed.

Schedule Margin

Schedule margin should be identified by modeling an early completion of the IMS workflow preceding a key program milestone or the program completion. This effectively should establish a time allowance which should be actively monitored throughout the execution of the program.

During each status and baseline maintenance cycle the program team should analyze the calculated difference between the forecasted status and the management goal. Critical and driving path analysis should be then conducted and mitigation plans are put in place to preserve schedule goals

Regardless of the method of implementation schedule margin should only be placed as the last task/gap before a final program event or end item deliverable. It should be clearly identified with the words “SCHED MARGIN” (or similar) and be under the control of the program manager

TRD

When a technical reference document (TRD) is part of the program technical baseline, one should also maintain traceability between the TRD sub-sections and the IMS tasking. Ensuring all TRD requirements are traceable to IMS tasking reinforces the concept that the entire scope of the program has been addressed in the IMS.

CLIN

As applicable, effort within a contract line item (CLIN) in the IMS should be vertically traceable to the relevant CLIN in the contract. This includes cost, technical and schedule requirements specific to the CLIN.

CDRL

The contract data requirements list (CDRL) identifies the data times to be developed and delivered on a specific procurement or program. The CDRL provides contractor guidance for preparation and submitting of reports, including reporting frequency, distribution, formatting and tailoring instructions. All discrete and non-recurring CDRLs should be traceable to detailed IMS task/activities.

Schedule Health Assessment

Periodic schedule health assessments are essential to ensure the IMS is valid and effective for reporting on accomplishments and predicting future performance. The program leadership team needs to be aware of the health of the schedule used to execute the program. By implementing regular schedule health assessments and addressing issues identified in those assessments, program managers should be confident in using the schedule to manage the works.

A schedule health assessment is often a report (display or document) containing a defined set of data or statistics reviewed for compliance to a standard, threshold or guideline. Schedule health assessments are primarily quantitative and address the generally accepted scheduling principles (GASP).

In the IMS supplemental guidance, programs should document procedure that states the frequency of schedule health assessments, weighting of data and a defined set of exceptions to criteria (e.g. does not include summary tasks, LOE)

Schedule Risk Assessment

The probability of overrunning a program schedule can be assessed by determining how much risk exists and where it is greatest. The schedule risk assessment (SRA) enables program managers to estimate the time and significant of those risks.

This is achieved by identifying the highest risk items along the critical and near critical paths in the schedule. This also involves calibrating the risk thresholds of all activities.

SRA determines program-level schedule risk as a function of risk associated with various activities that compose the program.

Probability distributions are developed for each activity using 3-point duration estimates (maximum, most likely and minimum) with reference to historical data. The method uses these distributions in a Monte Carlo simulation of the schedule and derives a probability distribution of total program completion or other key dates within the program.

Schedule execution metrics

Critical Path Length Index (CPLI)

It measures how realistic the program completion date is, based on the remaining duration of the critical path and the amount of total float available.

CPLI is one of the *defense contract management agency (DCMA)* 14-point assessment metrics and identifies programs that are having difficulty executing their critical path. The target of the CPLI is 1.0 or greater. A lower value indicates an increased risk of being late at program completion.

$$\text{CPLI} = \frac{\text{Critical Path Length} + \text{Total Float}}{\text{Critical Path Length}}$$

The result is an index that measures the sufficiency of the total float available relative to the remaining duration of the critical path. For example, 20 days of float on a critical path that has 80 days remaining would result in a CPLI of 1.25 indicating a low risk of not completing on time. However, if the critical path has 800 days remaining, a total float of 20 days would result in a CPLI of 1.03. Although this is still above the target of 1.0, it indicates there is much less room for error. To achieve a CPLI of 1.25 in this case would require 200 days of total float.

Schedule Performance Index (SPI)

This index is an earned value management tool comparing baseline cost of work performed (BCWP) with baseline cost of work scheduled (BCWS) to indicate cumulative and monthly schedule performance. It is an early warning tool used to determine if the schedule is at risk and indicates whether the program should increase efficiency to complete on time.

SPI is a summary level snapshot measuring how well the program (or a portion of the program) has actually performed to the baseline plan. SPI is similar in function to the baseline execution index (BEI), except it is a ratio based on the earned value fundamentals of budgeted cost of work scheduled and budgeted cost of work performed.

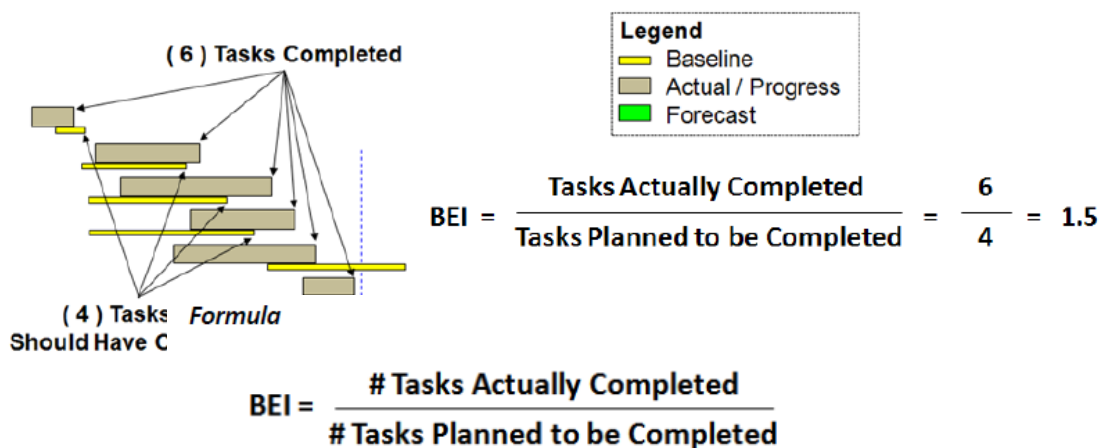
Baseline Execution Index (BEI)

This index measures the number of tasks completed as a ratio to those tasks that should have been completed to date according to the original (baseline) plan. It reveals the execution pace for a program and provides an early warning of increased risk to on-time completion.

BEI is a summary level snapshot measuring how well the program (or a portion of it) has actually performed against the baseline plan. The BEI is a simple index measure of a count of completed tasks with a count of tasks scheduled to be completed.

Perhaps the most significant drawback to BEI (and SPI) is the fact that its calculation is based on the average performance of all tasks. Most programs will have certain areas that are performing better or worse than other areas. BEI combines these areas of mixed performance into a single index. Because of this, programs make a misleading view of the program by looking at BEI alone.

Examples



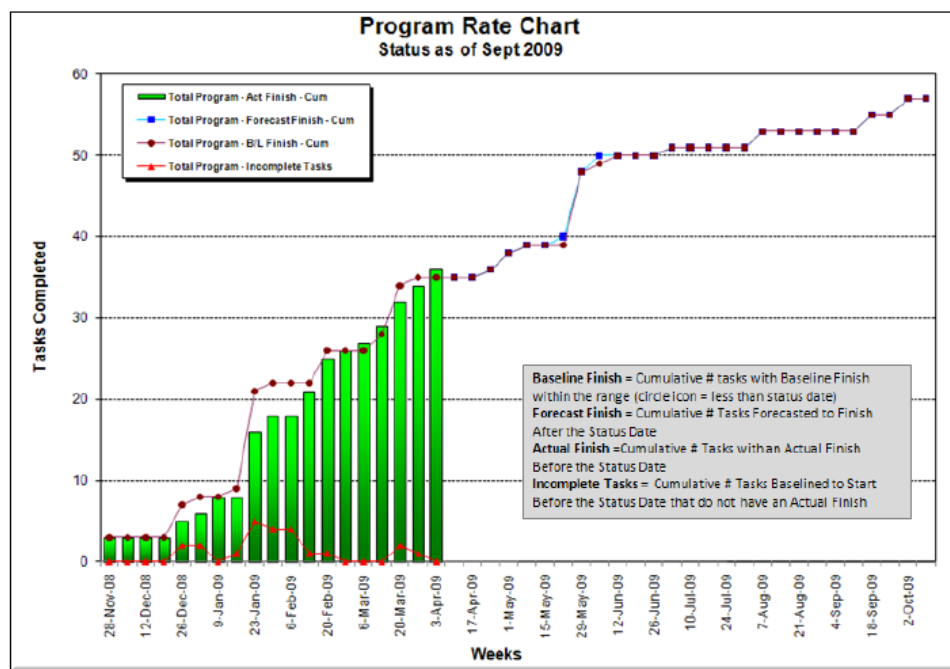
Current Execution Index

This index is a schedule execution metric that compares forecast dates from one status period to the next. It represents the fidelity of the forecast schedule and a program's ability to execute tasks as projected each month.

Its design is to encourage a forward-looking perspective to IMS and program management. The real benefit of implementing CEI is an increased program emphasis on ensuring the accuracy of the forecast schedule. This results in a more accurate predictive model and increases the program's ability to meet its contractual obligations on schedule.

Schedule Rate Chart

Example



Schedule rate charts provide management with an easy to read overview of the program's task completion over time. The chart shows a trend line with the number of cumulative tasks baselined, forecasted and actually finished at each status interval.

The program team can use this chart to identify activity performance trends over time.

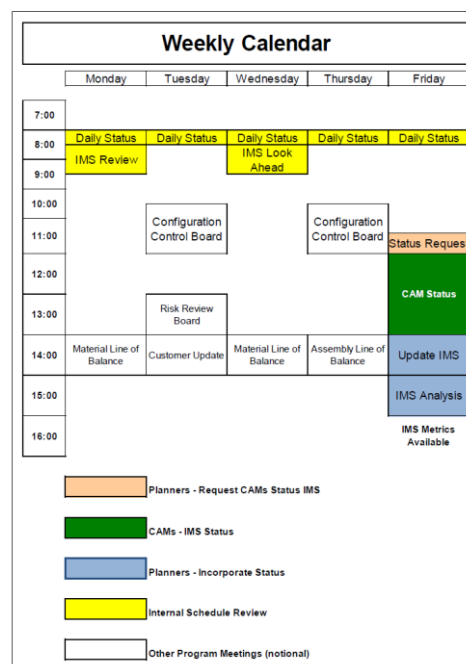
Business Rhythm

Successful program establish, execute and follow a business rhythm for the status, maintenance and analysis of the IMS. Establishing this rhythm early in the program creates the momentum that keeps the program processes on track, creating an environment of on-time work completion at a regular and consistent pace.

The program manager creates this rhythm by establishing and following a standard business calendar that lays out regular IMS updated and program status reviews.

A key purpose for the business rhythm calendar is to ensure that intermediate products are available for review and validation. This ensures that the integrity of all the inter-related systems is current. Late reviews of intermediate products typically affect the validity of downstream products so programs should ensure timeliness in the production and review of intermediate products.

Sample Program Weekly Calendar



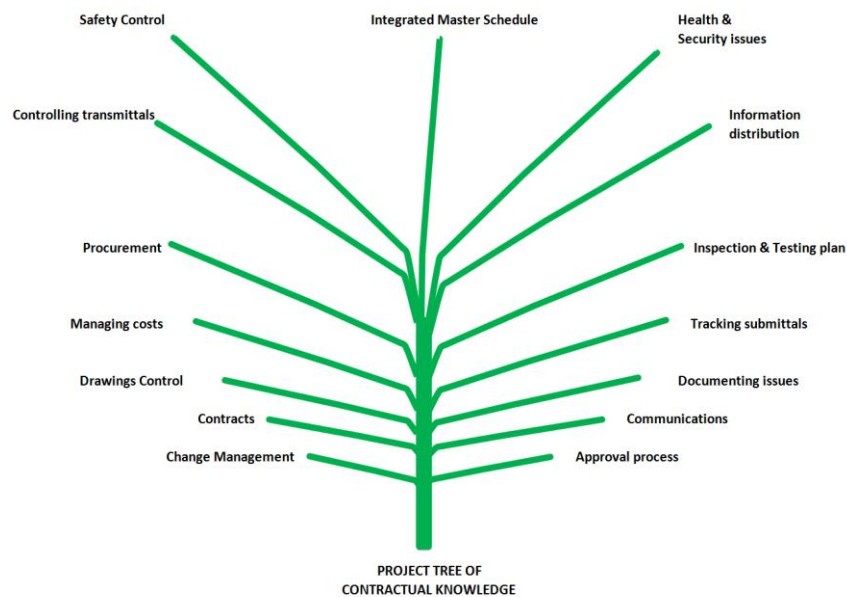
Example



Additional Control Integration

The integrated master schedule should additionally address updated information on the following project control issues with specific software to fit the purpose:

- Cost compliance;
- Scope management;
- Document control statistics;
- Payment Requisitions;
- Safety statistics;
- Health and security issues;
- Quality control; and
- Risk status.



SCL Core Principles Relating to Delay and Compensation

Programme and records

To reduce the number of disputes relating to delay, the contractor should prepare and the contract administrator (CA) should accept a properly prepared programme showing the manner and sequence in which the contractor plan to carry out the works.

The programme should be updated to record actual progress and any extension of time (EOTs) granted up to the data date selected for the update.

If this is done, then the programme can be used as a tool for managing change, determining EOTs and periods of time for which compensation may be due. Contracting parties should also reach a clear agreement on the type of records that should be kept.

Purpose of the Extension of Time

The benefit to the contractor of EOT is only to relieve its company of liability for damages for delay (usually liquidated damages LDs) for any period prior to the extended contract completion date. The benefit of an EOT for the employer is that its company establishes a new contract completion date and prevents time for completion of the works becoming 'at large'.

Entitlement to Extension of Time

Application for EOT should be made and dealt with as close in time as possible to the delay event that gives rise to the application. The contractor will potentially be entitled to an EOT only for those event or causes of delay in respect of which the employers has assumed risk and responsibility (called in the protocol 'employer risk events').

The parties should attempt so far as possible to deal with the impact of employer risk events as the work proceeds, both in terms of EOT and compensation.

Procedure for Granting Extension of Time

The EOT should be granted to the extent that the employer risk event is reasonably predicted to prevent the works being completed by the then prevailing contract completion date. The goal of the EOT procedure is the ascertainment of the appropriate contractual entitlement to an EOT; the procedure is not to be base on whether or not the contractor needs an EOT in order not to be liable for liquidated damages.

Effect of Delay

For an EOT to be granted, it is not necessary for the employer risk event already to have begun to affect the contractor's progress with the works, or for the effect of the employer risk event to have ended.

Incremental Review of Extension of Time

Where the full effect of an employer risk event cannot be predicted with certainty at the time of initial assessment by the CA, the CA should grant an EOT for the then predictable effect. The EOT should be considered by the CA at intervals as the actual impact of the employer risk event unfolds and the EOT increased (but not decreased, unless there are express contract terms permitting this) if appropriate.

Float as it relates to time

Unless there is express provision to the contrary in the contract, where there is remaining float in the programme at the time of an employer risk event, an EOT should only be granted to the extent that the employer delay is predicted to reduce to below zero the total float on the activity paths affected by the employer delay.

Float as it relates to Compensation

If as result of an employer delay the contractor is prevented from completing the works by the contractor's planned completion date (being a date earlier than the contract completion date), the contractor should in principle be entitled to be paid the costs directly caused by the employer delay, notwithstanding that there is no delay to the contract completion date (and therefore no entitlement to an EOT), provided also that at the time they enter into the contract, the employer is aware of the contractor's intention to complete the works prior to the contract completion date and that intention is realistic and achievable.

Concurrent delay and its effect on entitlement to extension of time

Where contractor delay to completion occurs or has effect concurrently with employer delay to completion, the contractor's concurrent delay should not reduce any EOT due.

Concurrent delay and its effect on entitlement to compensation for prolongation

If the contractor incurs additional costs that are caused both by employer delay and concurrent contractor delay, then the contractor should only recover compensation to the extent its firm is able to separately identify the additional costs caused by the employer delay from those caused by its own delay. If it would have incurred the additional cost in any event as a result of contractor delays, the contractor will not be entitled to recover those additional costs.

Identification of float and concurrency

Accurate identification of float and concurrency is only possible with the benefit of a proper programme, properly updated.

After the event delay analysis

The protocol recommends that, in deciding entitlement to EOT, the adjudicator, judge or arbitrator should so far as it is practicable put him/herself in the position of the CA at the time the employer risk event occurred.

Mitigation of delay and mitigation of loss

The contractor has a general duty to mitigate the effect of employer risk events on its works.

Subject to express contract wording or agreement to the contrary, the duty to mitigate does not extend to requiring the contractor to add extra resources or to work outside its planned working hours. The contractor's duty to mitigate its loss has two aspects:

- Must take reasonable steps to minimise its loss; and
- Must not take unreasonable steps that could increase its loss.

Link between extension of time and compensation

Entitlement to an EOT does not automatically lead to entitlement to compensation (and vice versa).

Valuation of Variations

Where practicable, the total likely effect of variation should be pre-agreed between the employer/CA and the contractor, to arrive if possible at a fixed price of a variation, to include not only the direct costs (labour, plant and materials), but also the time-related costs, and agreed EOT and the necessary revisions to the program.

Basis of calculation of compensation for prolongation

Unless expressly provided for otherwise (eg by evaluation based on contract rates), compensation for prolongation should not be paid for anything other than work actually done, time actually taken up or loss and/or expense actually suffered.

In other words, the compensation for prolongation caused other than by variations is based on the actual additional cost incurred by the contractor. The objective is to put the contractor in the same financial position it would have been if the employer risk event had not occurred.

Relevance of tender allowances

The tender allowances have limited relevance for the evaluation of the costs of prolongation and disruption caused by breach of contract or any other cause that requires the evaluation of additional costs.

Period for evaluation of compensation

Once it is established that compensation for prolongation is due, the evaluation of the sum due is made by reference to the period when the effect of the employer risk event was felt, not by reference to the extended period at the end of the contract.

Global Claims

The not uncommon practice of contractor making composite or global claims without substantiating cause and effect is discouraged by the protocol and rarely accepted in courts.

Acceleration

Where the contract provides for acceleration, payment for the acceleration should be based on the terms of the contract. Where the contract does not provide for it, but the contractor and the employer agree on the need for acceleration, the basis for payment should be agreed before it is commenced.

It is not recommended that a claim for so-called constructive acceleration be made. Instead, prior to any acceleration measure, steps should be taken by either party to have the dispute or difference about entitlement to EOT resolved in accordance with the dispute resolution procedures applicable to the contract.

Disruption

Disruption (as distinct to delay) is disturbance, hindrance or interruption to a contractor's normal working methods, resulting in lower efficiency. If caused by the employer, it may give rise to a right to compensation either under the contract or as a breach of contract.

Economy of Schedules

Planning and scheduling, the heart and soul of any construction project, provide owners with the means to keep their budgets under control, identify and control risks and provide contractors with tools to ensure they will be adequately rewarded for all the work performed. This is referred to as economy of schedules and it begins and ends with a proper management of an Integrated Master Schedule (IMS).

The primary purpose of any IMS, is to help Owners, Program Managers, Program Teams and Contractors optimize project planning, coordinate workflows, and support the decision-making processes.

IMS helps communicate and coordinate ideas about what, when, and how things might occur in the future. At the same time, it records past events in a disciplined manner, allowing forensic analysis when necessary to clarify issues.

Unfortunately, many owners and construction contractors in the Middle East and Europe choose to ignore what the economy of schedules can do for them. In most cases, this is because they consider money, not time, to be their primary asset.

As a result, millions of dollars go down the drain either undetected due to lack of proper systems to identify and validate them or carelessly ignored due to lack of knowledge and experience in the field.

In the planning and scheduling arena, each organization or program might assess the IMS topic and make minor adjustments to the best available practice system with the primary aim of customizing it.

This does not mean that planning and scheduling should be reduced to an accountability exercise. IMS implementation uses intelligent dynamic tools, not just reporting instruments that can save an organization's money and eliminate the frustrations brought on by the complexity of a project.

As the IMS represents a predictive model of the entire program, it should be considered the focal point of any project's program management strategy.

IMS will not guarantee success, but operating without effective plans and schedules can increase the risk of missing program cost, time milestones, and technical objectives, not to mention more expenses for project owners, less revenue for contractors and continuous frustration for both.



As an illustration of the range of issues an IMS can help avoid, partial lists for project owners and contractor have been drawn below:

Owner point of view:

- Contractors late completion;
- Out of specification materials;
- Insufficient human resources;
- Not properly qualified Personnel;
- Lack of effective planning and scheduling;
- Overstated cost estimating;
- Lack of productivity;
- Lack of subcontracting coordination;
- Out of sequence work;
- Insufficient equipment;
- Difficult Variation Orders;
- Poor workmanship;
- Late and incomplete contractual reporting;
- Deficient Communications Management;
- Safety violations stopping work;
- Unreasonable request for time extensions;
- Contractual Claims;
- Defective work; and
- Poor procurement practices.

Contractor point of view:

- Extra work not specifically provided in the contract;
- Work different from the one provided in the contract;
- Work in a particular manner or by a particular method, which varies from or is more expensive than the method originally anticipated;
- Work according to the contract that has been changed, amended, revised, amplified, or clarified;
- Work according to the contract lacking enough detail and requiring unanticipated engineering services;

- Work according to one particular method when two or more alternative methods are allowed by the contract, or when the contractor should be free to devise his own methods;
- Work out of sequence;
- Works are stopped, disrupted or interrupted wholly or partially, directly or indirectly;
- Joint occupancy when not specifically allowed by the contract;
- Owner furnished equipment is late, in poor condition or not suitable for the use intended;
- Accelerated performance in any way which requires added man hours, equipment, or materials;
- Compression of work when forced by circumstances beyond your control to do a greater amount of work in a shorter period of time than anticipated.
- Directed to follow any new, different, or shorter schedule;
- Having to relocate existing work because of lack of coordination, information, etc. and
- Equivalent notices are received from subcontractors or lower-tier vendors that are based on the actions of the client whether directly or indirectly.

Protecting your investment and staying out of trouble requires more than simple Bar charts, Non-resourced schedules, Cost accounting, Cost estimates, Histograms, Spreadsheets and Data bases because they do not provide the required intelligence that can be derived from collected information.

If schedules, their revisions and their updates are to be an effective financial tool, they must always reflect reality, be cost oriented, be updated permanently, be revised with the latest progress, cost and procurement information and be owned by the entire program cadre of stakeholders.

If the IMS is used simply as a reporting tool, project owners and contractors will never benefit from the value of available technologies capable of providing instant performance feedback and more importantly the required intelligence to ascertain your company will save or recover what is due according to contractual obligations.

Utilizing planning and scheduling for excellence guidelines (PASEG) and generally accepted scheduling practices (GASP) state-of-the-art technologies provide the smart information that you need where you need it, when you need it and how you need it.

This will avoid unnecessary expenses, eliminate or mitigate risks, get the best out of variation orders, reject or award extensions of time, identify early signs of trouble, coordinate stakeholders, integrate design, approvals and deliveries within the master schedule, but more importantly they will take care of you investment and your capacity to comply with administrative goals.

All these intelligent support to your project comes from increasingly innovative and disciplined planning and scheduling initiatives such as:

- *Critical/Driving Path Analysis;*
- *Schedule Risk Assessment (SRA);*
- *IMS Vertical Traceability;*
- *IMS Horizontal Traceability;*
- *Resource De-Confliction;*
- *Critical Path Length Index (CPLI);*
- *Giver/Receiver – Handoffs Analysis;*
- *Baseline Execution Index (BEI);*
- *Schedule Margin Analysis (SMA); and*
- *Schedule Penetration Implementation.*

Underestimating the value and power of modern planning and scheduling technologies will result in costly financial losses and a chain of unrewarded investments and efforts.

Be a winner, join the economy of schedules now.



Claims Recovery Checklist

Following a structured process will greatly enhance recovery of extra costs incurred when an organization is documenting justified claims to its clients. The key is to keep all claim opportunities open until the completion of all work and it has been verified that no claim exists.

A. Claim Documentation Checklist

- Use claim reservation clauses on requests for information, Proposals, Change Orders, etc.
- Protest in writing and file written Notices of Claim under the Changes and/or Suspension of Work/Delay clauses within the timeframe contractually specified after you encounter, receive, and/or are directed, either orally or in writing, by the Client, to do any of the following:
 - Extra work not specifically provided in the contract;
 - Work different than as provided in the contract;
 - Work in a particular manner or by a particular method, which varies from or is more expensive than the method originally anticipated;
 - Work according to the contract that has been changed, amended, revised, amplified, or clarified;
 - Work according to the contract that is so lacking in detail as to require unanticipated engineering services;
 - Work according to one particular method when two or more alternative methods are allowed by the contract, or when the contractor should be free to devise his own methods;
 - Work out of sequence;
 - Stopping, disrupting or interrupting the work wholly or partially, directly or indirectly.
 - Joint occupancy when not specifically allowed by the contract;
 - Client furnished equipment is late, in poor condition or not suitable for the use intended;
 - Accelerated performance in any way which requires added manhours, equipment, or materials;
 - Compression of work when forced by circumstances beyond your control to do a greater amount of work in a shorter period of time than anticipated;
 - Directed to follow any new, different, or shorter schedule;
 - Having to relocate existing work because of lack of coordination, information, etc.

- When equivalent notices are received from subcontractors or lower-tier vendors that are based on the actions of the client whether directly or indirectly.
- Analyze job progress in detail prior to each Progress Meeting, and use the meeting as a forum for discussing and protecting delays, extra work, etc.
- Request specific time extensions whenever significant events occur;
- Follow an established procedure to record all conflicts, discrepancies, etc. Also keep it current with your subcontractors and lower-tier vendors to support any flow-through claims;
- Have all appropriate supervisory personnel maintain a Daily Log Report. Emphasize such factors as:
 - Actual Work performed;
 - Work scheduled but not performed;
 - Extra work required (including detail of who authorized it, type of work performed, by whom, extra cost or delay experienced.);
 - Discrepancies in plans;
 - All visits to work site from client's representatives, engineers, architects, etc.
 - Any other unusual events, which occur.
- Take professional progress photographs at regular intervals, presumably monthly, to illustrate the working conditions, problems and progress as the job evolves. Delay factors in particular should be photographed and identified;
- Review progress monthly and note in detail all causes of delay, problems encountered, progress, etc. Forward a copy to the client as the job progresses so the client has documented knowledge of all related issues supporting any potential claim. Schedule comparisons should be made on the basis of the last approved overall progress schedule;
- Obtain written confirmation of all oral directives received. If the client will not confirm in writing, write a confirming letter to the client and document submission date;
- Maintain a receipt log of all revisions to drawings, pertinent correspondence, and other applicable data;
- Review employees' time card and/or the daily logs in detail and revise them as necessary to better reflect potential claim areas such as extra work performed, delays, etc.

- Establish a system that records clearly not only the hours worked but also the amount of work accomplished and any resulting loss of efficiency;
- Consider completing a productivity analysis to document efficiency of work accomplished, either by in-house personnel or 3rd party consultants. This gets quite complex and is not called for in every situation, but if such a study is made during a good production period and then another study is made during a poor production period the difference can be quite startling and serve as good proof of loss of efficiency factors;
- Schedule work in such a manner so there is at least one good month of "normal" production when everything is going well to use as a base period to compare poorer months when efficiency is significantly lowered and the costs of production are equivalently higher; and
- Categorize costs in such a manner that all claim aspects will be discernible as much as possible. Then maintain as many records as possible with those categories in mind so they will be provable at a later date.

B. Claim Reservation Clauses

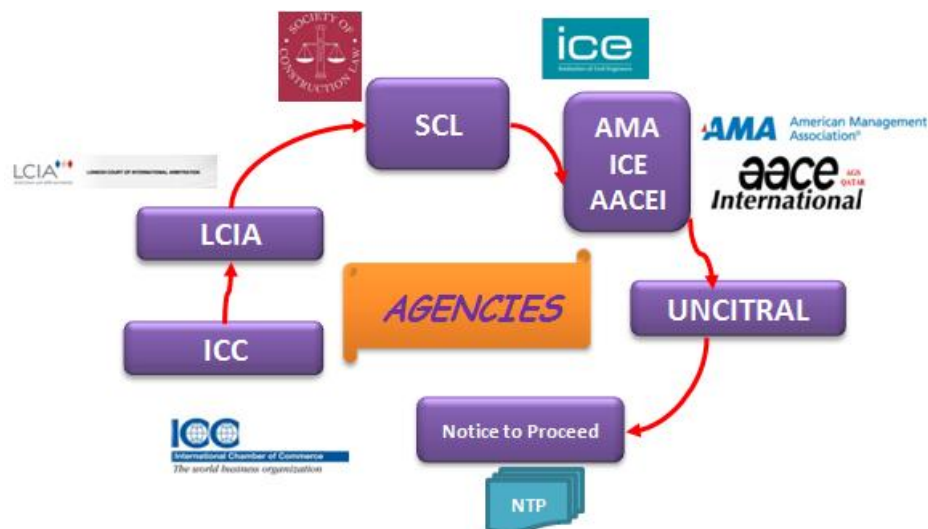
As previously noted, it is always important not to waive any claim rights by negotiating and signing off on Modifications or Change Orders which pay part of your recess costs only, but not all of them, or which do not provide time extensions or impact money as requested. This is particularly critical when there are disruption, extended overhead, acceleration, and impact costs in addition to normal costs. Consider utilizing claim reservation paragraphs on Requests for Information, Proposals, and Change Orders or Modifications, as follows:

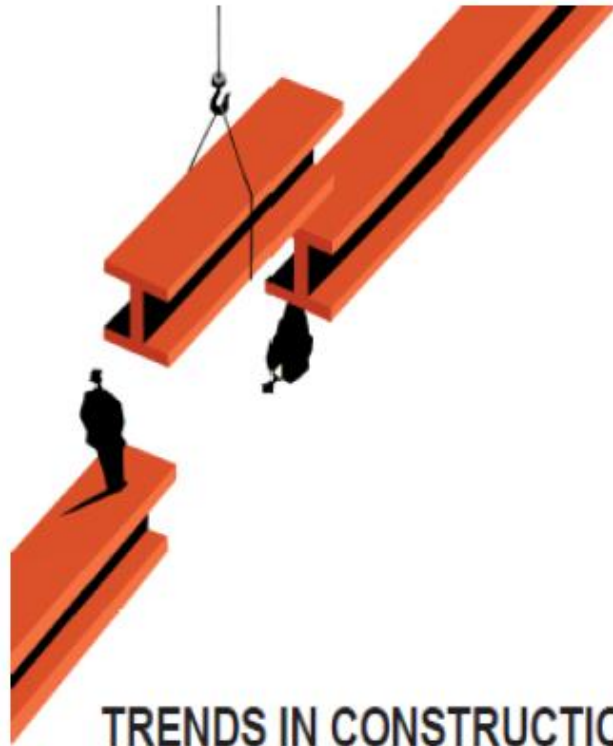
- Above the signature block on Requests for Information insert the following phrase: "You are hereby notified that this issue constitutes a Suspension of Work and Change for which we reserve the right to request an equitable adjustment if the information is not promptly supplied or has an adverse effect on other work."
- On cost proposals which are submitted, include the following statement at the conclusion thereof: "This proposal is based solely on the usual cost elements such as labor, material and normal markups and does not include any amount for changes in the sequence of work, delays, disruptions, rescheduling, extended overhead, acceleration and/or impact costs, and the right is expressly reserved to make claim for any and all of these and related items of cost prior to any final settlement of this contract."
- On Change Orders and Modification Notices which are executed and returned to the Client, add the following statement at the conclusion immediately preceding your signature: "The compensation and completion time allowed by this Contract Change Order or Modification does not include any amounts for changes in the sequence of work, delays, disruption, rescheduling, extended overhead, acceleration and/or impact costs, and the right is expressly reserved to make claim for any and all of these and related items of cost prior to any final settlement of this contract. "

C. Contractors and Suppliers.

A review of the terms and conditions of subcontracts and lower-tier purchase orders is required to assure compliance with any contractual liabilities accepted from the client. Any liability to the client should be properly conveyed to the applicable subcontractor or lower-tier vendors. The following actions should be considered when dealing with subcontractors and lower-tier vendors:

- Verify that all subcontracts and purchase orders incorporate the terms of the client's contract by reference, including General Provisions, Special Conditions, etc., so all parties will be responsible to the same extent as you;
- Insert a Disputes clause, which requires all subcontractors or lower-tier vendors to the same dispute resolution process as agreed to with the client;
- Be wary of differences between normal contractual dealings and those implied in law by the Uniform Commercial Code (UCC) when dealing with lower-tier vendors;
- Include all subcontractors and key suppliers when revising schedules. Get any schedule changes accepted in writing immediately. If written confirmation is not received promptly, then send written notification immediately; and
- Obtain appropriate final releases from all subcontractors and vendors prior to giving the client and final release.





TRENDS IN CONSTRUCTION CLAIMS & DISPUTES

Claims and disputes are a constant in the construction industry, regardless of whether the industry is doing well or poorly. The number of claims seems to have risen during the recent recession despite the downturn (or perhaps as a result of downturn) in the construction industry.

This research perspective is intended to provide an overview of some relatively recent trends related to construction claims and disputes observed by the Navigant Construction Forum™. Through this insight it is hoped that owners, design professionals, construction managers, contractors and subcontractors can devise ways to avoid such issues going forward – thus making projects more successful, and more profitable, for all stakeholders.

Presented herein are provided with the understanding that they are general in nature, do not relate to any specific project or matter and do not necessarily reflect the official policy or position of Navigant.

Because each project and matter is unique and professionals may differ in their opinions, the information presented herein should not be construed as being relevant or true for any individual project or matter. Navigant makes no representations or warranty, expressed or implied, and is not responsible for the reader's use of, or reliance upon, this research perspective or for any decisions made based on this publication.

Purpose of Research Perspective

The Navigant Construction Forum™ was recently asked to identify new trends in the area of construction claims and disputes. In response to this request the Forum conducted a survey of Navigant senior claims consultants in-house and an e-mail survey of a number of external claims professionals with national and international claims experience.

The purpose of this research perspective is to summarize these new trends in an effort to alert stakeholders in the construction industry as to the issues we see coming now and in the relatively near future. Additionally, the Navigant Construction Forum™ offers recommendations that should help decrease the downside risk of these new trends related to construction claims and disputes.

Introduction

“When I first became involved in construction claims and disputes on a full time basis in the 1970’s I asked a noted claims consultant why he had chosen claims consulting as a career.”

The response was short and to the point –

“When construction is good, claims are good. When construction is bad, claims are better!”

“I did not fully appreciate the accuracy of this response until the recession in the early 1980’s.” The construction industry suffered a severe downturn but the number of claims proliferated in an inverse ratio thus providing even more work for claim consultants than when the industry was doing well.

Over the past few years of the current recession the industry has again taken a substantial hit economically. The number of projects declined as did the number of construction companies. However, despite this decline (or perhaps as a logical reaction to this adverse impact to the industry) it appears from the Construction Forum’s research that the number of claims has risen.

“Claimsmanship” has proliferated in the past few years and appears to be equally practiced by both owners and contractors, and their representatives. As a direct result, the number of claims has likewise grown.

From this growth in claims several trends have developed, among them:

- The value of construction disputes has declined in the U.S. (as opposed to the Middle East) but the duration of such disputes has increased;
- Courts and Boards of Contract Appeals decisions limiting recovery of damages in the areas of concurrent delay; suspensions of work; time extensions; notices and claim filing requirements; calculation of extended home office overhead costs; proof of differing site conditions; and risk transfer in the design/build environment have all become more frequent;
- Public owners have increased the use of False Claim allegations in response to claim filings;
- Contractual Parties are increasingly using relatively new tools in order to avoid disputes, conflicts and ultimately protracting claims;
- Software companies are increasingly coming up with tools useful to protect both parties from claim liabilities;

- Contractors are becoming more creative in developing new forms of claims; and
- Increased use of Alternative Dispute Remedies (“ADR”) has grown significantly in order to avoid costly arbitration and litigation, resolve issues and, perhaps, maintain relationships between the parties.

These trends may have been made worst by what the construction bar refers to as the “vanishing trial”.

In regard to this issue a recent article noted that between “...1938 and 2009, there was a decline in the percentage of civil cases going to trial of over 90%...” The author also noted that “...the pace of the decline was accelerating toward the end of that period...”

In March 2012, Andrew D. Ness, then Chair-Elect of the American Bar Association Forum on the Construction Industry addressed this issue. As Mr. Ness pointed out, in the U.S. legal system “construction law” is derived primarily from case law – prior legal decisions.

Mr. Ness pointed out as the construction industry changes and evolves (i.e., project delivery methods, Building Information Modeling, Green construction, location based scheduling, etc.) so too must construction law.

The unintended consequence of the **vanishing trial** is that construction law stops evolving. Mr. Ness quoted the Rt. Hon. Beverly McLachlin, Chief Justice of Canada (whom he identified as a “recovering construction lawyer) on this issue as follows:

“All areas of law – construction law included – are living, constantly evolving trees. Some branches sprout and grow; others crack and need trimming. Thus, the law develops and remains responsive to changes in society. The Construction Law tree looks different than it used to. It may not be dead, but new branches are not appearing as often as they once did. And old branches that need pruning are being neglected.”

This research perspective discusses each of these growing trends, and where possible, offers ideas for mitigating or avoiding the negative impacts of such trends in construction claims and disputes

Value and Duration of Construction Disputes

It has been reported that globally the value of construction disputes has declined in the United States and Asia but increased slightly in Europe and substantially in the Middle East. The average value of the disputes sampled for this report is set forth below by region. At the global level, dispute value declined 8% from 2010 to 2011.

REGION	DISPUTE VALUE – 2011 (MILLIONS)	DISPUTE VALUE - 2010 (MILLIONS)
UK	US\$10.2	US\$7.5
EUROPE	US\$35.1	US\$33.3
MIDDLE EAST	US\$112.5	US\$56.3
ASIA	US\$53.1	US\$64.5
US	US\$10.5	US\$64.5
GLOBAL AVERAGE	US\$32.2	US\$35.1

This same report, however, also concluded that the time required to resolve disputes rose from 9.1 months to 10.6 months. The average length of time (in months) to resolve the disputes sampled increased at the global level by some 16%, as set forth below:

REGION	LENGTH OF DISPUTE – 2011 (MONTHS)	LENGTH OF DISPUTE – 2010 (MONTHS)
UK	8.7	6.75
EUROPE	11.7	10
MIDDLE EAST	9	8.25
ASIA	12.4	11.4
US	14.4	11.4
GLOBAL AVERAGE	10.6	9.1

CAUSE OF CLAIMS	ASIA	EUROPE	MIDDLE EAST	NORTH AMERICA	UK
Ambiguous requirements		3		1	5
Conflicting party interests	3			3	2
Contract administration issues		1	1	5	1
Failure to resolve time extension & delay damages contemporaneously	1	4	4	4	
Incomplete design	5	2	2	2	
Owner caused changes		5	3		4
Unrealistic time of completion	4				
Unrealistic risk transfer	2		5		3

By **reverse scoring** these rankings by region and adding up the scores this report indicates that these causes of claims can be ranked globally in the following order.

1. *Contract administration issues;*
2. *Incomplete design and ambiguous contract requirements;*
3. *Failure of the owner and contractor to resolve time extensions and delay damages at the time they occur on the project;*
4. *Conflicting party interests;*
5. *Unrealistic risk transfer; and,*
6. *Unrealistic time of completion.*

This cause of claims listing and ranking offers some suggestions regarding claims avoidance and resolution which will be discussed at the end of this research perspective.

This report provided a good deal of information on claims value, length of time to resolve disputes and the most common causes of disputes. The methodology employed in this study limited the projects and disputes sampled to those the firm handled during the 2010 and 2011 period.

A more robust survey of claims and disputes submitted to international arbitration was published in the summer of 2011. This survey determined that in the 2009 – 2011 timeframe there were 65 international contract arbitrations in which at least US\$1 billion was in controversy.

The amounts in controversy ranged from US\$20 billion to US\$1 billion.

The total value of these 65 disputes was US\$174.8 billion with the median value being US\$2.73 billion.

This global survey indicates a much higher range of dispute values than the earlier cited study. This study also indicates that more international projects, at least, are going to arbitration than the earlier study seemed to indicate.

Like the American Lawyer survey, a recent Navigant Construction Forum™ research perspective also concluded, among other things, that international construction arbitration is growing rapidly.

Born and Miles have reported that case filings with the International Chamber of Commerce (“ICC”), the American Arbitration Association (“AAA”) and the International Center for Dispute Resolution (“ICDR”) have increased between three and five fold over the past 25 years.

A major university in the UK also documented an 8.5% growth among 22 arbitral institutions between 2003 and 2007.

The Navigant Construction Forum™ concludes that international construction projects have larger disputes and are more likely to resolve their disputes through arbitration.

On the other hand, while the number of claims within the United States seems to have increased substantially, claim values have declined as many more small claims are now asserted.

Additionally, fewer claims are going to arbitration or litigation and more are resolved through negotiation and/or various forms of ADR.

The result of this trend is that owners and contractors will, more than likely, be left on their own to resolve disputes without resort to arbitration or litigation.

For those well prepared to take on this challenge dispute resolution costs may decline and cost recovery or defense will increase. For those not so well prepared, the outcome will not be nearly as satisfactory. This research perspective should help both owners and contractors to become better prepared to face this new challenge.

Increased Limitations on Recovery of Damages

Another trend observed by the **Navigant Construction Forum™** is that it is becoming increasingly difficult for contractors to recover on claims in litigation on government contracts. Courts seem less likely to rule in favor of contractors in a number of areas. Some limitations on contractor claim recovery are set forth below.

Concurrent Delay

Concurrent delay is defined as “two or more delays that take place or overlap during the same period, either of which occurring alone would have affected the ultimate completion date.”

Concurrent delay has been a contentious and hotly debated issue since its creation in 1867. One in-depth article on the issue of concurrent delay examined the origins of the doctrine of concurrent delay. The authors summarized the history of concurrent delay as follows:

“...it is evident that the modern doctrine of concurrent delay is premised not on the equitable resolution of construction delays, but is instead based on past litigants’ failure or inability to effectively prove their cases and the older courts’ hostility toward liquidated damages ...

Over time, these factors merged and evolved into the legal doctrine of ‘concurrent delay.’ After several years, the later courts stopped delving into the ‘real’ analyses of these early courts, and instead automatically applied these early courts’ resolutions of concurrent delay as a ‘**rule**’ for resolving all overlapping construction delays.”

The issue is contentious in the main because it is frequently used as a “**get out of jail**” card.

When owners assess liquidated damages for late project completion, contractors frequently respond with allegations of concurrent delay (i.e., overlapping owner and contractor delay periods) asserting that all or a part of the late completion was excusable, non-compensable delay due to overlapping owner caused delay and thus not subject to liquidated damages.

The argument works equally well in reverse: when contractors assert owner caused delay owners often respond with allegations of contractor caused delay, alleviating the need to pay for delay damages.

It appears, however, that courts have become more conservative when faced with concurrent delay arguments and are less likely to simply accept concurrent delay as a way of resolving delay cases.

Courts seem to be placing more of a burden on contractors with respect to concurrent delay. For example, in *George Sollitt Construction Company v. U.S.* the Court stated that a contractor has an affirmative obligation to separate and apportion concurrent delay.

That is, when a contractor is asserting a delay claim they must first prove the delay was caused by an event for which they were not responsible; then document the duration of the delay to the critical path or the end date of the project; and then prove there was no concurrent delay during the same period.

The Court also stated that generally, recovery will be denied when delays are concurrent or intertwined and the contractor has not separated its delays from those caused by the owner.

The Court also stated that a contractor seeking recovery of compensable delay must "... disentangle its delay from those allegedly caused by the government..." and prove that both delays impacted the project's critical path.

Rulings such as this obviously increase a contractor's burden of proof when arguing for recovery of compensable delay.

Additionally two significant court cases – one a Federal case in 2010 and the other a State case in 2011 – seem to have created new hurdles concerning concurrent delay.

In *M. Maropakis Carpentry, Inc. v. U.S.* the Court of Appeals for the Federal Circuit ruled that the contractor could not allege or assert concurrent delay against government imposed liquidated damages unless the contractor had filed a certified delay claim under the terms of the Contract Disputes Act²⁰ and requested and received the Contracting Officer's final decision.

In this case, the contractor had written letters to the Contracting Officer, but did not submit and certify a delay claim. Nor did the contractor request and receive the final decision from the Contracting Officer. While the Court of Federal Claims upheld the government imposed liquidated damages it stated that they had no jurisdiction to hear the contractor's claim of concurrent delay.

On appeal to the Court of Appeals for the Federal Circuit, that Court likewise upheld the liquidated damages assessment, but again denied the contractor the right to argue concurrent delay due to their lack of ***compliance with the Contract Disputes Act.*** Through two court cases, the contractor was denied the right to present his defense of concurrent delay due to their failure to conform to the strict requirements of the Contract Disputes Act.

In *Greg Opinski Construction, Inc. v. City of Oakdale* a California Court of Appeals issued a similar ruling to Maropakakis but relied instead on the terms of the contract documents as California does not have a statute analogous to the Federal Contract Disputes Act.

The Superior Court ruled that since Opinski had not followed the contractually mandated procedure related to change orders, claims and time extensions, it was not necessary for the Court to review the alleged delay issues (the concurrent delay argument), regardless of which party was responsible for the late completion. On appeal the Appellate Court ruled that:

“[The] City was entitled to liquidated damages for [the] general contractor’s late completion under the construction contract, even if the delays were caused by the City’s conduct, where the contract required any extension of time to be obtained through certain procedures, and [the] general contractor did not use such procedures.”

The Appellate Court ruled in this manner despite the fact that the City admitted some of the delay for which they assessed liquidated damages was actually City caused delay.

After surveying the scene concerning the issue of concurrent delay it appears that courts have increased the contractor’s burden of proof concerning concurrent delay and constructed new hurdles concerning the use of concurrent delay as a defense when owners assess liquidated damages for late project completion.

Owners seeking to enhance their defence against concurrent delay situations can draw a lesson from these cases. Contractors need to carefully comply with contract provisions and statutory requirements in order to maintain the ability to present concurrent delay as a defense against liquidated damages.

Limitation on Recovery of Suspension Costs

An owner directed suspension of work is typically considered an excusable, compensable delay. Unless the terms of the contract specifically preclude cost recovery, in most cases the compensation sought includes extended field office overhead costs as well as extended or unabsorbed home office overhead costs.

In the United States the Eichleay Formula is the classic way to calculate unabsorbed home office overhead. As such, arguments concerning suspensions of work typically revolve around how much delay did the suspension order actually cause and are the extended or unabsorbed home office overhead damages properly calculated.

In *The Redland Company, Inc. v. U.S.* the Air Force issued a contract to The Redland Company to resurface an aircraft parking area at Homestead Air Reserve Base in Florida in October 2000. On December 1, 2000 the Contracting Officer issued the Notice to Proceed (“NTP”) for the work.

The contract required the contractor to begin work within 14 days of receipt of the NTP. Also on December 1, 2000 the Contracting Officer issued an order suspending all work on the project until further notice. The Air Force finally lifted the suspension order on October 18, 2004 (nearly four years later) and directed that work begin on October 20th and be completed by December 19, 2004 – a period of 60 days.

The Redland Company began work as directed but was unable, for a variety of reasons, to complete the work until January 11, 2006 – some 449 days after the suspension of work order was lifted, and far beyond the 60 day period of completion. The Contracting Officer granted a time extension through January 11, 2006, did not assess any liquidated damages but also did not grant any compensation for the additional time.

The contractor filed several claims for additional compensation in September, 2006 and requested that the Contracting Officer issue a final decision approving or denying each claim within the 60 day time limit contained in the Contract Disputes Act.

The Contracting Officer neither issued a final decision on any of the claims nor did he notify the contractor when such a decision would be issued. The contractor then filed suit in the Court of Federal Claims. The case involved nine distinct claims.

However, of interest for this research perspective is Claim 1 – Unabsorbed Home Office Overhead.

The contractor sought recovery of their unabsorbed home office overhead for the period between December 1, 2000 and October 18, 2004 – nearly four years – and calculated the damages based on the Eichleay Formula.

The Court openly acknowledged that the Air Force issued the NTP and suspended all work on the same day. The Court likewise acknowledged that the suspension extended until October 18, 2004.

Citing *P.J. Dick, Inc. v. Principi*, *Nicon, Inc. v. U.S.* and *Altmayer v. Johnson* the Court noted that to establish entitlement to Eichleay damages a contractor must prove three elements:

1. Government caused delay or suspension of work of an uncertain duration;
2. The delay must have extended the original time of performance or that the contractor finished on time but still incurred unabsorbed overhead costs because it planned to finish earlier; and,

3. The government required the contractor to remain on standby during the period of suspension, waiting to begin work immediately or on short notice once the suspension was lifted.

The Court of Federal Claims analyzed Redland's claim and determined while the government had issued a suspension order of uncertain duration which extended the original time of performance, Redland (1) had not started work on the project and (2) had not been required by the Contracting Officer to "remain on standby" until the suspension order was removed.

Thus, despite a four year delay, the contractor was denied recovery of unabsorbed home office overhead using the Eichleay Formula and was denied the right to recover unabsorbed home office overhead using an alternative method of calculation (allowed under certain circumstances based on *Nicon*).

The denial of recovery centered on the fact that the suspension directive was silent as to whether the contractor was to "remain on standby" while the work was suspended.

After *P.J. Dick* some commentators had suggested that it would be very difficult to establish the "standby" requirement "... because it is unlikely that a Contracting Officer will issue a suspension order containing a requirement that the contractor be ready to immediately resume full scale work with no remobilization period." It is more likely to be the case now that *Redlands* has zeroed in on the same issue.

Based on these cases, it appears that Courts are actively looking for ways to limit contractor damage recovery pursuant to suspension directives. It appears that in *Redlands* the Court felt that the four year suspension of work was too long to justify the award of overhead costs to the contractor.

It also appears that Courts may not understand that "work" begins before the first shovel of dirt is moved. Providing bonds and insurance; arranging and finalizing subcontracts and vendor agreements; planning the work; preparing and submitting the bid breakdown; etc. all are "work" even though no physical work in the field is underway.

Additionally, once a contract is awarded a contractor's bonding capacity is impaired to the extent of the initial contract value. During the four years Redland was suspended, their bond was in full force and effect.

If Redland was a small contractor this bond impairment may have prevented Redland from bidding on other projects as they may not have had sufficient bonding capacity to cover new projects. All are real costs incurred by contractors but the Courts in these cases either did not know how the construction industry operates or chose to ignore such damages to protect the government.

The lesson for contractors – in the event a contracting officer suspends all work on a project but does not state that the contractor “...must remain on standby ready to resume work promptly upon direction from the government...” recovery of unabsorbed home office overhead is seriously in doubt.

One option is for the contractor to immediately write back to the contracting office specifically asking if they are to “...remain on standby...” If the answer is “yes” then home office overhead damages may be recoverable. If the answer is “no” then the contractor is alerted to the situation and may seek out other ways to reduce their damages.

Restrictions on Time Extensions

In a recent article published in *Insight from Hindsight* the author commented that –

“Turning to decisions addressing the merits of delay claims and the means to prove them we find that the boards and courts are demanding greater specificity in proof of delays.

Total time claims continue to be denied.

Lack of contemporaneous, updated schedules is criticized.

Contractor delays are scrutinized for proof of government delays.

Claims lacking segregation of contractor and government delays often lead to denial as do analyses based solely on claims prepared after the project is completed.”

The author pointed to *Phillips National, Inc.* in which the Armed Services Board of Contract Appeals held Phillips responsible for a number of delays on the project because Phillips did not present a schedule delay analysis of any sort to the Contracting Officer or the Board separating the delays resulting from the government’s change orders from the delays caused by the contractor.

The Board noted that “Without a CPM schedule, there was nothing to approve and it follows that no bilateral modification incorporating an approved as-built schedule could have been issued.” As noted in this article, it appears that the Board denied the claim solely on the basis of non-compliance with the contract’s schedule requirements.

The author of this article went on to point out the results of *Jackson Construction Co., Inc. v. United States*. In discussing the outcome of this case the author noted that “In denying the claim, the Court’s decision provides a checklist of what not to do in presenting a claim.” (Underscoring provided.) Among the things Jackson did wrong:

1. Improperly calculated the home office overhead amount claimed;
2. Was unable to prove their intended early completion;
3. Failed to support the contention of cumulative impact of multiple changes beyond merely pointing to a large number of change orders; and,

4. Signed off on all government issued change orders without a proper reservation of rights.

As was pointed out by the author of the referenced article,

“In summary, this claim had no contemporary factual support for its theories of claim, no support for government liability, no reservation of rights on many change orders, no proper showing of causation and no justification for using the total cost method of calculating damages.”

It is noted, however, one interesting outcome from this decision was the Court’s statement that “...notice to the government is not a prerequisite to proving intent to finish early.”

In a similar manner the Court in *George Sollitt Construction Company v. U.S.* analyzed Federal delay claim case law, going back to 1909, to ascertain a checklist concerning time extensions. The *Sollitt* Court came up with the following checklist.

Compensable Delay

- The government is liable for an equitable adjustment when they cause a delay to the contractor’s performance;
- The government’s liability is limited to unreasonable delays under the Suspension of Work clause;
- The government’s actions or lack of action must be the sole proximate cause of the delay;
- The burden of proving compensable delay falls to the contractor as the claimant;
- The contractor bears the burden of separating and apportioning concurrent delays;
- The contractor must prove the extent of the government’s delay and its increased costs in order to recover;
- Increased costs of winter construction may be recoverable; provided that the contractor can demonstrate that but for the governments delay the work would have been completed prior to the winter;
- Increased cost of winter work must be apportioned if there are concurrent delays;
- When demonstrating the extent of the government’s delay the contractor bears the burden of proving critical path delays;
- Because the critical path changes over time, critical path schedule updates are needed to analyze delays;

- The contractor bears the burden of apportioning concurrent critical path delays;
- The contractor may recover wage rate increase costs that would not have been incurred but for the government's delay;
- The contractor must prove the amount of home office and field office overhead directly related to the government's delay;
- When the parties stipulate to a daily delay cost the contractor must prove the extent of the government's delay but is relieved of the obligation of proving their increased costs; and
- When multiple delays by one party are concurrent with each other, that other party's delays must be analyzed to ensure that the overall effect of these multiple delays is correctly attributed to that party.

Excusable Delay

The government has the initial burden of showing late completion and the contractor has the burden of showing that the delay was excusable.

When the government has caused part of the delay to project completion, liquidated damages are either waived or apportioned.

Some may consider these various decisions harsh and very tough on contractors attempting to assert delay claims. Others, however, believe that these decisions reflect a growing sophistication on the part of the judiciary when considering delay claims and the standard by which such claims are measured.

Finally, it is also acknowledged that these decisions may reflect a lack of attention to contract requirements on the part of contractors who fail to file notice, follow contract procedures, or wait until the end of the project to prepare and submit delay claims.

Contractors should use the guidelines above as a checklist when considering filing a delay claim. Documentation of each of the points in these guidelines must be thoroughly documented or contractors risk losing their ability to obtain time extensions.

Notice and Claim Filing Requirements

A recent article published in *Construction Lawyer* discussed lack of notice as a defense against construction claims. The author noted that “When technical and procedural defence are upheld, they encourage contract drafters to include more of them.

Owners and their construction managers devise increasingly complex ways to channel and limit the claims of their prime contractors. Prime contractors may similarly seek to circumscribe the claims of their subcontractors.”

While notice of claims is an issue of fairness between owners and contractors, the article points out that many owners now “...impose lengthy and detailed claims notice requirements as preconditions for recovery.”

The author points to one set of contract documents which requires the following be provided within a short time after the initial notice of claim.

The contractor is required “at a minimum” to provide the following –

- *Factual statement of claim;*
- *Dates concerning the event leading to the claim;*
- *Owner and A/E employees knowledgeable about the claim;*
- *Support from contract documents;*
- *Identification of other supporting documentation;*
- *Details on claim for contract time;*
- *Details on claim for adjustment of contract sum; and,*
- *Statement certifying the claim “...under penalty of perjury...”*

Finally, this set of contract documents also states that any claim not in compliance with these requirements “...shall be conclusively deemed to have been waived by Contractor.” (Lest readers conclude that this particular set of prerequisites is unique to this particular State, the author of this research perspective has encountered similar requirements in many contracts across the country.)

This article goes on to discuss enforcement of notice requirements in State and Federal courts. With respect to enforcement of notice requirement in Federal courts, the article notes four general exceptions to notice requirements, as follows –

1. Written notice was actually provided;
 2. The Contracting Officer had actual or imputed knowledge of the facts giving rise to the claim;
 3. Notice to the contracting officer would have been useless;
 4. The contracting officer considered the claim on its merits despite the lack of notice.
- “Unless a contractor is operating in a jurisdiction where the enforceability of notice provisions is clearly limited, it is important for contractors to understand the full literal

requirements of their contractual provisions and either comply fully or negotiate a written agreement as to what form of notice will satisfy the other party under those clauses.”

Extended Home Office Overhead Calculated as a Percentage of Costs

A 2012 U.S. Court of Appeals case determined that when a contractor’s time of performance was extended as a result of owner caused changes, then any extended home office overhead cost had to be calculated as a percentage of the direct cost of that work.

In *Redondo Construction Corp. v. Puerto Rico Highway and Transportation Authority* the contractor was awarded three highway construction contracts by the Authority. All three projects encountered differing site conditions and owner caused changes resulting in compensable changes and delay.

Redondo filed claims but before these claims could be resolved, went into bankruptcy. The various claims were tried in Bankruptcy Court which awarded some \$12 million in damages to Redondo plus pre-judgment interest.

On appeal to the Federal District Court the damages awarded were affirmed in all respects. The Authority appealed this decision to the First Circuit Court of Appeals. The Appellate Court upheld some of the lower Court’s findings but focused on the issue of home office overhead recovery. Citing *C.B.C. Enterprises, Inc. v. United States*⁴⁰ and *Aniero Concrete Co. v. N.Y. C. Constr. Auth.* the Court concluded that:

“When a project’s completion is delayed due to necessary but unanticipated work for which the contractor is entitled to compensation, extended overhead is usually calculated as a percentage of the direct costs of the additional work. This percentage-of-direct-cost approach comports with standard practice in the construction industry under which a contractor normally charges an owner a percentage of a project’s direct costs to cover its overhead.

... at least some of the project delays were attributable to extra work for which the debtor was compensated. (*Citation omitted.*) For those delays, extended overhead should have been awarded as a percentage of the direct costs associated with the projects’ change orders and extra work orders. (*Citation omitted.*)

‘It is inappropriate to use the Eichleay formula to calculate home office overhead for contract extensions because adequate compensation for overhead expenses may usually be calculated more precisely using a fixed percentage formula.’”

Some Federal government agencies use fixed markup rates in their construction contracts – specifically the General Services Administration and the Veteran’s Administration.

Many State and local government agencies and professional associations also impose fixed change order mark up rates in their contract documents.

However, based on the author's experience, such percentage of cost mark up rates rarely, if ever, take into account the cost of delay arising from owner caused changes. Rather, such predetermined percentages are typically the owner's opinion of what it may cost the general contractor to administer added work (including the management of vendors, suppliers and subcontractors involved in performing a portion of the added work).

As a result the *Redondo* ruling may deprive contractors of the right to recover delay damages arising from owner directed changes that also cause project delay.

Contractors performing work under contracts without fixed markups for change order costs in the contract should consider adjusting their markups when quoting changes which involve project delay as they may no longer be able to collect extended home office overhead costs as separate damages.

Differing Site Conditions - A Change in the Rules?

The Armed Services Board of Contract Appeals ("ASBCA") recently examined a Type I differing site condition ("DSC") claim in the case of *Appeal of NDG Constructors* which arose from a contract with the U.S. Army Corps of Engineers.

The contract involved the construction of a waterline under I-90 to service Ellsworth Air Force Base in South Dakota. A portion of this waterline was to be tunneled under I-90 employing the bore and jack method. NDG subcontracted the tunneling portion of the project to BT Construction, Inc. BT examined the two geotechnical reports issued with the bid documents when preparing their bid to NDG. The NDG contract included the standard Differing Site Conditions clause from the Federal Acquisition Regulations ("FAR").

BT encountered subsurface conditions it considered materially different than those indicated in the contract documents and filed notice of DSC to NDG, who provided notice to the Contracting Officer. The Contracting Officer denied NDG's claim and NDG appealed to the ASBCA.

NDG contended that they encountered a “different soil profile”, soil with different characteristics and increased soil moisture conditions all of which, they claimed, were materially different from the conditions indicated at the time of bidding. In part, NDG based their claim on BT’s assumption that the soils would transition from one type to another along “...a straight line projection.”

Citing *Sternberger v. United States* the NDG Court stated that “It is highly improbable that subsurface soil of one type would transition into another type along a straight line projection. We do not accept NDG expert’s opinion in this regard because it is intrinsically unpersuasive.”

With respect to NDG’s other claims the Court focused on the issue of what conditions were “indicated” in the contract documents and concluded that –

“A Type I differing site condition claim is dependent on what is ‘indicated’ in the contract. *Foster Constr. C.A. and Williams Bros. Co. v. United States*, 435 F.2d 873, 881 (Ct. Cl. 1970) (“On the one hand, a contract silent on subsurface conditions cannot support a changed conditions claim....

On the other hand, nothing beyond contract indications need be proven.”). A contractor cannot be eligible for an equitable adjustment for Type 1 changed conditions unless the contract indicated what those conditions would supposedly be. *P.J. Maffei Bldg. Wrecking Corp. v. United States*, 732 F.2d 913, 916 (Fed. Cir. 1984); *S.T.G. Construction Co. v. United States*, 157 Ct. Cl. 409, 414 (1962).

Here, the contract documents did not indicate where precisely the contractor would encounter Carlile Shale. In bidding the project, BTC did not expect to transition from “Fine Alluvium” to “Carlile Shale” or, to use its terminologies, from “clay fill material” to “shale rock material” at any specific point but only “at some point.” ... And, as BTC predicted, the soil profile indeed changed from clay fill material to shale rock material ‘at some point.’

The Court concluded that since the soil conditions did, in fact, transition “at some point” then the conditions encountered did not differ materially from those “indicated” in the contract documents at the time of bidding. The Board also ruled that with respect to the soil conditions the general warnings contained in the geotechnical report to the effect that “...soils between boring locations may vary...” was sufficient information to alert a contractor to changing soil conditions.

The Board in this case also ruled that despite the fact that the soil borings were silent on the moisture content of the soils, the contractor was solely at risk for drawing any assumptions based on the absence of moisture content.

In the *Appeal of Bean Stuyvesant LLC*⁴⁸ the Armed Services Board of Contract Appeals dealt with the issue of what “...physical conditions at the site...” were indicated in the contract documents.

In *Bean Stuyvesant* the contractor relied upon the geotechnical information provided with the bidding documents. However, the Invitation to Bid did not include soils information taken from another set of borings at the site.

The information from the separate boring was “... available upon request...” The contractor did not request this additional information and did not see it until the information was produced by the government at the Board hearings.

The Board ruled against the contractor on the basis that the conditions encountered did not differ materially from those indicated based upon “available” information. The Board concluded that “...a contractor has a duty to review information that is made available for inspection.” (Underscoring supplied.)

Based upon these cases, contractors seeking recovery under the Differing Site Conditions clause –

- 1. Are at risk when they draw straight lines between boring in order to calculate soil transition or encounters with differing types of soils and/or rock.*
- 2. Are at risk by drawing conclusions or inferences from “silence” (i.e., the absence of any groundwater information from a series of borings may no longer justify the assumption that there is no groundwater to be encountered on the project).*
- 3. Information referred to at bid as being “available upon request” may now be considered as information included in the contract documents or incorporated into the contract documents by reference.*

These two cases taken together increase a contractor’s risk concerning latent site conditions considerably and appear to indicate a lack of understanding by the Boards as to how a contractor uses geotechnical information during bidding.

They seem to miss the point that the bidders are attempting to turn geotechnical information into means and methods and costs to be included in their bids. For example, 20 borings on a project showing no groundwater at excavation depth typically means that the contractor should not expect to encounter groundwater while excavating.

How else could a contractor possibly interpret the absence of such an indication? While the absence of data such as this has typically been considered reasonable and logical when making a bid, it is apparently no longer sufficient to justify a “material difference” when seeking recovery for a differing site condition.

Risk Transfer Increasing in Government Contracts

The concept of equitable risk allocation has started to unravel in recent years. The equitable adjustment doctrine that has for many years, provided avenues of recovery for cost and time, are now being modified by contract drafters.

For example, one respondent to the *Navigant Construction Forum™ survey* conducted in support of this research perspective commented that he is seeing more anti-concurrent delay clauses in contracts (i.e., contracts that declare concurrent delay is non-excusable delay).

This same respondent also commented that he had been asked to review two sets of “bridging documents” that were approximately 90% complete design (versus the more typical 30% design).

The design/ build entities in these cases claim that given this level of design detail done by the owner’s consultant prior to bidding, the **Spearin Doctrine** should apply. The owner, as might be expected, asserted that since this is a design/build contract the design/ builder is solely responsible for the design and the bridging documents were intended for general guidance only.

Strictly speaking, this is not risk transfer but has the effect of substantially increasing the design/builder’s risk if the owner holds the design/build entity to the requirements of the bridging documents as if they were crafted by the design/builder.

A very recent Civilian Board of Contract Appeals (“CBCA”) case related to construction of a U.S. embassy under a design/build contract. According to the CBCA the design/build contract transferred all risk under the contract to the design/build entity by using clauses such as the following:

“The Contractor remains solely responsible and liable for design sufficiency and should not depend on reports provided by the Government as part of the contract documents.”

“Offerors shall not rely on any information provided by the Government concerning the host country, such as climatology data at the site, local laws and customs, currency restrictions, taxes, or the availability of local labor, etc.”

With respect to the infrastructure that was supposed to be available to the site at the outset of construction the Board commented that while the contract documents stated the local government had “...committed to provide utilities ... to the site by June 2003” “nothing in these statements can be construed as a promise from the Department of State that these events would occur...”

The Board decided that design/build contractor had no right to rely on the design documents provided by the government at time of bidding because the contract advised bidders “...not to rely on the drawings, as the drawings are for the sole purpose of illustrating the design intent...” Finally, the Board ruled that since the design/build contractor was “...solely

responsible and liable...” for the design, they “...should not depend on reports provided by the Government as part of the contract documents.”

Increased Use of False Claim Actions

False claims allegations are becoming much more frequent in construction today than at any time previously. With the increased emphasis on the False Claims Act (“FCA”) contractors who certify a claim to the U.S. government are potentially liable to the government if any portion of a passed through subcontractor claim is determined to be a false claim.

Subsequent to the Deficit Reduction Act of 2005⁵² some 28 States have adopted State False Claim Acts and others apparently are contemplating doing the same.

Not only are government agencies more likely to counter contractor claims with allegations of false claims but the legal profession has also become very active in this arena. If one Googles “whistleblower attorneys” you’ll find some 2.95 million hits in 0.22 seconds – most of which advertise firms ready, willing and able to assist potential whistleblowers with *qui tam* lawsuits under the FCA.

Added to this are some recent changes to Federal law which broadened the definition of the term “claim” and extended the reach of the FCA to include subcontractors. One recent paper summarized the impact of the Fraud Enforcement Recovery Act of 2009 (“FERA”)⁵⁴ in the following manner.

“FERA expanded the FCA in several additional ways, such as by eliminating the “presentment” requirement, adding a “relate back” provision to circumvent statutes of limitations, and declaring retroactivity for certain amendments. The passage of FERA reflects the government’s growing commitment to discover and prosecute fraud. In furtherance of that commitment, Congress began to include antifraud measures in statutes, such as the American Recovery and Reinvestment Act (the Stimulus Bill), that create an independent board to oversee disbursed funds and provide for government audits.”

“False claims and charges of fraud are receiving increased emphasis by the federal government. For years, the playing field was generally limited to procurement of supplies, and defense industry contracts, but recently the clear trend has increased prosecution overall and therefore greater focus on construction.”

The author pointed to *Riley Construction Co. v. United States and Daewoo Engineering and Construction Co. Ltd. V. United States* to help make his point. Riley (a design build contractor) included both their claimed costs as well as their architect’s cost on the basis that the architect’s fee was based on a percentage of total construction cost.

Riley did this without asking the architect, thus the architect was unaware that they were involved in the claim. When the government found out about this they counterclaimed with false claim and fraud allegations against Riley.

The Court determined that Riley lacked “intent” when submitting the claim for the architect’s fee and dismissed the government’s FCA claim. This case serves to highlight the government’s intent to seek out and prosecute false claims and fraud and illustrates the risk a contractor assumes when submitting a claim that is not fully vetted.

In *Daewoo* the contractor submitted a certified claim to the government in the amount of \$64 million that included approximately \$50.6 million in unsubstantiated costs. The contractor apparently assumed that the claim would be settled via negotiation and did so in order to give them some room to negotiate with the government.

Regardless of the merits of the initial claim the government counterclaimed under the Contract Disputes Act and the FCA and entered a “special plea in fraud” under the Contracts Dispute Act seeking forfeiture of Daewoo’s entire claim under the provisions of 28 U.S.C. §2514.

When all was said and done the U.S. Court of Appeals for the Federal Circuit ruled that Daewoo not only forfeited their entire \$64 million claim but also owed the government an additional \$50 million plus FCA penalties.

Contractors working on government contracts need to understand the implications of the FCA and FERA; need to thoroughly examine and document all claimed costs; and must understand the legal significance and risk of “certifying” a claim to the government.

New Forms of Claims

Lest readers conclude that current claimsmanship is exercised solely by owners let's now look at contractors. Based on the Forum's survey most contractor "claimsanship" seems to result in assertion of new forms of claims. Some of those identified are set forth below.

Constructive Claim

In *M. Maropakis Carpentry, Inc. v. U.S.* the contractor submitted a number of letters to the government requesting time extensions. However, notwithstanding the requirements of the contract and the Contract Disputes Act, the contractor did not certify the claim nor did the contractor request and receive a final decision from the contracting officer.

During their appeal to the Court of Appeals for the Federal Circuit the contractor argued that their letters to the contracting officer constituted a valid claim for a time extension sufficient to give the Court of Federal Claims jurisdiction over the matter.

As stated by the Court of Appeals "Maropakis also argue[d] that even if it was not in technical compliance with the CDA, the United States had actual knowledge of the amount and basis of Maropakis' claim and therefore the Court of Federal Claims had jurisdiction."

In essence, Maropakis tried to create a "constructive claim" – a claim derived by inference or implied by operation of law – analogous to a constructive change, a constructive suspension or constructive notice.

Maropakis did this, of course, in order to get the Court to hear their case as the Court of Federal Claims ruled that they did not have jurisdiction since the contractor had not fully complied with the requirements of the Contract Disputes Act.

The Appellate Court focused on the statutory requirements of the Contract Disputes Act and chose not to infer the existence of a constructive claim in the absence of these clear requirements.

All in all, this was an ingenious attempt by a desperate contractor to get around their failure to conform to clear statutory requirements. The Navigant Construction Forum™ believes that more contractors will attempt to use the "constructive knowledge" approach to excuse their own non-compliance with contract or statutory requirements concerning claim submittals.

Under-inspection Claim

The concept of a constructive change to a contract arising from “improper inspection” or “over-inspection” is not a new one in construction law. Several respondents to the Forum’s survey, however, mentioned having experience with claims of “under-inspection.”

Typically, these claims have been described in one of two ways. In the first instance, under-inspection is alleged as a way to recover additional costs for completion of punchlist work at the end of the project.

The theory asserted is that, had the owner or their representative inspected the contractor’s work properly during the performance of the work, they would have found the work was improperly performed or incomplete and corrected the situation, thus eliminating the need for punch list work.

Since the punch list work exists this proves allegation of improper inspection and the resulting damages are the cost of the punch list work. The second way the under-inspection claim is used is to allow the contractor to argue wrongful termination for default due to substandard work.

Despite the number of times the author and others heard this type of claim asserted none had heard of this claim being litigated.

The Appeal of Tawazuh Commercial and Construction Co. Ltd. involved construction of 40 kilometers of road in Afghanistan. The contractor was ultimately terminated for default due to failure to perform its contract obligations; failure to provide a remediation plan as required by the cure notice; and, failure to perform in accordance with the contract requirements.

The contractor asserted, among other defenses, that if the Corps of Engineers had performed adequate quality inspections throughout the project the situation would have been corrected earlier and thus prevented the default termination.

The ASBCA, citing *Amigo Building Corp.* stated that –

“It is well established that the government’s right to inspect work generally does not relieve a contractor of its obligations to perform, nor can the contractor properly rely on government inspection for the discovery and correction of any errors.”

Based on this approach the ASBCA concluded that –

“It is unfortunate that appellant’s failure to comply with the contract requirements did not come to light earlier in the performance of its work. However, appellant would have us decide that the government’s alleged failure to perform an early adequate inspection shifts the contract performance issues to the government’s shoulders. This we cannot do. The contract clauses and the relevant law clearly establish that it was

appellant's legal responsibility to maintain an adequate inspection system to ensure that its work conformed to the contract requirements. The government proved that appellant was in default and appellant did not establish that the default was excusable."

Tawazuh, like Amigo before it, lost their argument that an owner's underinspection entitled Tawazuh to additional money and time to repair the substandard work and/or excused the substandard work and deprived the owner of the right to terminate for default.

However, the Navigant Construction Forum™ believes it is foreseeable that as less experienced, less skilled contractors undertake to perform more complex projects this type of claim is likely to occur with greater frequency.

Equipment Productivity Loss

Lost labor productivity claims in U.S. construction law are hardly new. *Wunderlich Contracting Co. v. United States* involved a request for delay damages and lost labor productivity arising from a contract issued in 1950 and completed in 1951.

Although the Wunderlich joint venture did not prevail in this case, their failure to recover was based on lack of causation – that is, they did not establish the nexus between the government's actions and the damages sought – not because the Court rejected the theory of entitlement.

However, the Navigant Construction Forum™ survey revealed that some contractors have started to assert "equipment inefficiency claims." Such claims attempt to establish a direct cost ratio between labor costs and equipment costs using the following formula –

$$\frac{\text{Actual Equipment Cost}}{\text{Total Labor Cost}} = \text{Equipment Cost added}$$

What contractors are attempting to show is that for every labor cost dollar expended "\$x" dollars was spent on equipment. This equipment productivity cost is applied to labor productivity claims (whether total cost, modified total cost, measured mile calculations, etc.). To calculate this type of claim, first the contractor has to calculate the labor cost added to the base scope cost and then the added labor cost is multiplied by the equipment cost ratio calculated by the formula set forth above.

While the claim is understandable (due to its simplicity) and the mathematics of the calculation are easy to follow, there is often no direct correlation between labor and equipment cost. There is a strong likelihood that when labor is less productive, that equipment costs go up.

However, increased equipment costs are more likely to increase due either to idled equipment or equipment retained on site longer than anticipated resulting in increased equipment rental or ownership costs on the project.

Despite the flaws inherent in this new type of claim the Navigant Construction Forum™ believes it will become more common as contractors seek new ways to recover losses or less sophisticated contractors become more involved in claims.

“Expanded” General Condition Costs

Extended general condition costs, frequently referred to as extended field office overhead are a well accepted element of damages when a contractor encounters excusable, compensable delay. The general rules governing extended field office overhead cost recovery are fairly straight forward.

- 1. The contractor must prove they encountered an excusable, compensable event as defined by the terms of the contract;*
- 2. The contractor must document notice of delay was provided per the contract;*
- 3. The contractor must submit their time extension request in accordance with the terms of the contract;*
- 4. The contractor must demonstrate that the event caused “x” days of delay as required by the contract and that there was no concurrent delay; and,*
- 5. The contractor must then document the daily field office overhead cost after removing all non-time related field office overhead costs.*

Assuming the contractor can show all of the above then they are generally entitled to a time extension and delay damages (consisting of extended field office overhead and, perhaps, extended home office overhead).

In response to the Navigant Construction Forum™ survey a new variant of this claim was identified. The “expanded general conditions” claim is not grounded on compensable delay. This new form of claim is a request for additional cost to add field resources in order to complete the project on time.

At first blush, this sounds like an element of damages arising from either directed or constructive acceleration – but no acceleration is being alleged by the contractor.

After execution of the contract and notice to proceed, the contractor submits a change order proposal for expanded general conditions on the basis that the project is more complicated; is less fully designed; has more design busts and flaws; requires more coordination with third parties; will have more changes than normal; etc. Any or all of these allegations are then used to justify the addition of field resources (i.e., document control, project control, project engineering staff, superintendents, etc.).

The problems with this new form of claim are many :

- 1. The contractor has not proven entitlement to any of these allegations under the contract;*
- 2. The contractor has not expended any additional costs as a result of any of these allegations; and,*
- 3. There is not yet any cause and effect relationship between any of the potential future problems the contractor anticipates and the cost the contractor is presently seeking.*

In more general terms, this new form of claim creatively “front end loads” anticipated claim costs. As such, there is a distinct possibility that the contractor asserting this new form of claim has walked, inadvertently though it may be, into a false claim under either the Federal or a State statute.

The Navigant Construction Forum™ believes that this new claim will likely spread for a while; at least until a Court ruling concerning the false claim potential is issued. If this claim is found to be a false claim, then it will slowly fade into the background as this information gets around.

If it is found not to be a false claim (along the lines of *U.S. ex rel. Alva Bettis v. Odebrecht Contractors of California, Inc.*) where the Court found that the fraud-in-the-inducement theory, on its own, did not constitute a false claim, then this new form of claim may become more common.

Recommendations

Claimsmanship has not declined over the past two decades and is projected to continue based upon this review of current trends. Based on this conclusion, the Navigant Construction Forum™ offers the following recommendations for all stakeholders in the construction industry.

For Owners

Since owners have more opportunity to practice claimsmanship when preparing the contract documents, owners need to spend more time training their own staff concerning the terms and conditions of their contracts and in contract administration.

Recall that one major international survey showed that improper contract administration is, in fact, the most common cause of disputes. With appropriate and ongoing training, this type of dispute should be avoidable.

Since so many claims and disputes arise from incomplete, poorly coordinated or flawed drawings and specifications and from owner issued changes, owners are well advised to spend more time in planning and design stages of the project to “get it right” before bidding.

If owners make certain that all project stakeholders have adequate input to the planning and design, then this should sharply reduce owner issued change orders during construction, reducing in turn the disputes that stem from such changes.

Recognizing that no “perfect” set of drawings and specifications exists, owners seeking to avoid changes and disputes should implement bidability, constructability, claims prevention and operability reviews before issuing bidding documents using an independent review team in order to find and eliminate errors and mistakes and prevent the need for owner issued changes during construction.

End of the job claims are complicated, difficult to analyze and tough to resolve. Such claims result from owners refusing to settle delay claims until all work is completed.

Owners need to train their staff to focus on timely delay notice and act aggressively to resolve time extension requests and delay damages at or near the time they occur.

Owners should not discourage contractors from filing notices of change, delay, etc. but should encourage them to do so in order to identify potential claims and disputes as early as possible and then focus on issue resolution in a timely manner.

A knee jerk reaction of many owners (and their representatives) when faced with a claim or dispute is to automatically go into a self-preservation mode. However, experience demonstrates that if both the owner and the contractor can maintain focus on project success, not party interest, and seek out solutions to potential problems when they first occur, then there will be fewer claims and disputes later as jointly crafted solutions tend to result in negotiated change order settlements at a lower cost.

Owners who are considering crafting unique risk assignment clauses must keep the basic rules of risk transfer in mind at all times.

First, all risk belongs to owner unless specifically assigned elsewhere in the contract since the owner has all the benefit of the constructed project.

Second, when any risk is assigned in a contract that risk should be assigned to the party best able to control risk if the risk event occurs.

Project owners need to spend more time with project delivery scheduling in order to avoid unrealistic scheduling requirements at the time of bidding as inappropriate schedules (either too short or too long) cause claims and disputes.



For Contractors

Contractors must pay more attention to scheduling, notice, and claim filing requirements lest they lose their right to prosecute such claims and recover time and cost. Contractors need to train their own staff in each of these areas and provide refresher training routinely rather than run the risk of losing their rights.

Contractors working on government contracts need to understand the implications of the FCA and FERA; need to thoroughly examine and document all claimed costs; and must understand the legal significance and risk of “certifying” a claim to the government.

Based upon the cases discussed in this research perspective contractors seeking recovery under the Differing Site Conditions clause –

Are at risk when they rely upon straight line interpretations between borings in order to calculate soil transition or encounters with differing types of soils and/or rock;

Are at risk by drawing conclusions or inferences from “silence” (i.e., the absence of any groundwater information from a series of borings may no longer justify the assumption that no groundwater will be encountered on the project); and,

Are at risk should they not review information referenced to in bid documents as “available upon request” as this available information may now be considered information included in the contract documents or incorporated by reference.

Contractors must remember that they cannot rely upon owner quality control inspections. Contractors must keep in mind that owner inspections are solely for the benefit of the owner, not the contractor. Contractors are obligated to conform to all requirements of the contract and perform their own inspections.

Contractors seeking to be creative with claims must seek out competent legal advice experienced with construction law in order to avoid pursuit of a claim that is unwinnable.

Contractors trying out a new theory of entitlement on a public works project must obtain legal advice from attorneys familiar with both Federal and State False Claims Acts in order to avoid accusations of false claims from the owner.

Conclusion

Owners and contractors seeking to practice claimsmanship need to keep in mind a paraphrased version of one of Sir Arthur Conan Doyle's Sherlock Holmes quotations

“What one man can invent, another can circumvent!”

At a time when owners and contractors say they want to discourage disputes on construction projects and find ways to deliver projects on time, within budget, safely and with the quality required by the contract, claimsmanship seems counterproductive and wasteful. The recommendations set forth above should help stakeholders achieve their stated goals.

Reference: www.navigant.com



EPC CONTRACTS

Basic features of an EPC contract

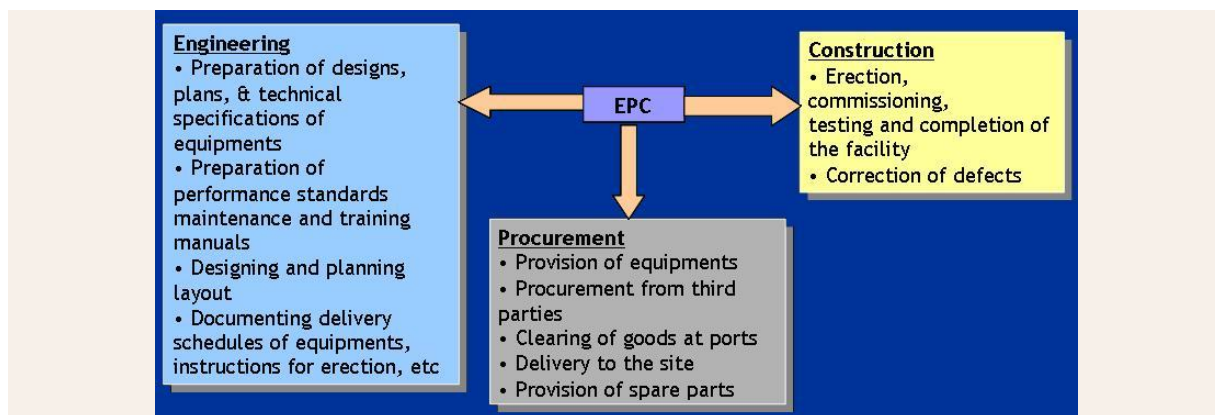
The key clauses in any construction contract are those which impact on:

- Time;
- Scope;
- Cost;
- Risk; and
- Quality.

The same is true of EPC Contracts. Engineering, Procurement & Construction (EPC).

Contracts are in the nature of Turn-Key Projects, having a combined scope of work involving services & supplies. *However, EPC Contracts tend to deal with issues with greater sophistication than other types of construction contracts.* This is because an EPC Contract is designed to satisfy the lenders' requirements for bankability.

Brief description of Engineering, Procurement and Construction



EPC Contracts provide for:

1. A single point of responsibility.

The contractor is responsible for all design, engineering, procurement, construction, commissioning and testing activities. Therefore, if any problems occur the project company need only look to one party - the contractor - to both fix the problem and provide compensation. As a result, if the contractor is a consortium comprising several entities the EPC Contract must state that those entities are jointly and severally liable to the project company.

2. A fixed contract price.

Risk of cost overruns and the benefit of any cost savings are to the contractor's account. The contractor usually has a limited ability to claim additional money which is limited to circumstances where the project company has delayed the contractor or has ordered variations to the works.

3. A fixed completion date.

EPC Contracts include a guaranteed completion date that is either a fixed date or a fixed period after the commencement of the EPC Contract. If this date is not met the contractor is liable for delay liquidated damages ("**DLDs**"). DLDs are designed to compensate the project company for loss and damage suffered as a result of late completion of the facility.

To be enforceable in common law jurisdictions, DLDs must be a genuine pre-estimate of the loss or damage that the project company will suffer if the facility is not completed by the target completion date. The genuine pre-estimate is determined by reference to the time the contract was entered into.

DLDs are usually expressed as a rate per day which represents the estimated extra costs incurred (such as extra insurance, supervision fees and financing charges) and losses suffered (revenue forgone) for each day of delay.

In addition, the EPC Contract must provide for the contractor to be granted an extension of time when it is delayed by the acts or omissions of the project company. The extension of time mechanism and reasons why it must be included are discussed below.

4. Performance guarantees.

The project company's revenue will be earned by operating the facility. Therefore, it is vital that the facility performs as required in term of output, efficiency and reliability. Therefore, EPC Contracts contain performance guarantees backed by performance liquidated damages ("**PLDs**") payable by the contractor if it fails to meet the performance guarantees. ***The performance guarantees usually comprise a guaranteed production capacity, quality and efficiency.***

PLDs must also be a genuine pre-estimate of the loss and damage that the project company will suffer over the life of the project if the facility does not achieve the specified performance guarantees.

As with DLDs, the genuine pre-estimate is determined by reference to the time the contract was signed.

PLDs are usually a net present value (NPV) (less expense) calculation of the revenue forgone over the life of the project. For example, for an ammonia and urea plant if the production rate of urea is 50 tonnes less than the specification, the PLDs are designed to compensate the project company for the revenue forgone over the life of the project by being unable to sell that 50 tonnes of urea.

It is possible to have a separate contract that sets out the performance requirements, testing regime and remedies. However, this can create problems where the EPC and the performance guarantees do not match. The preferred option is to have the performance guarantees in the EPC contract itself.

PLDs and the performance guarantee regime and its interface with the DLDs and the delay regime is discussed in more detail below.

5. Caps on liability.

As mentioned above most EPC contractors will not, as a matter of company policy, enter into contracts with *unlimited liability*. Therefore, EPC Contracts for process plant projects cap the contractor's liability at a percentage of the contract price. There are normally sub-caps on the contractor's liquidated damages liability. For example, DLDs and PLDs might each be capped at 20% of the contract price with an overall cap on both types of liquidated damages of 30% of the contract price.

There will also likely be a prohibition on the claiming of consequential damages. Put simply consequential damages are those damages which do not flow directly from a breach of contract, but which may have been in the reasonable contemplation of the parties at the time the contract was entered into.

This used to mean heads of damage like loss of profit. However, loss of profit is now usually recognized as a direct loss on financed projects and therefore, would be recoverable under a contract containing a standard exclusion of consequential loss clause. Nonetheless, care should be taken to state explicitly that liquidated damages can include elements of consequential damages.

Given the rate of liquidated damages is pre-agreed most contractors will not object to this exception.

In relation to both caps on liability and exclusion of liability it is common for there to be some exceptions. The exceptions may apply to either or both the cap on liability and the prohibition on claiming consequential losses.

The exceptions themselves are often project specific, however, some common examples include in cases of fraud or willful misconduct, in situations where the minimum performance guarantees have not been met and the cap on delay liquidated damages has been reached and breaches of the intellectual property warranties.

6. Security.

It is standard for the contractor to provide performance security to protect the project company if the contractor does not comply with its obligations under the EPC Contract. The security takes a number of forms including:

- § bank guarantee or bond for a percentage, normally in the range of 5-15%, of the contract price. The actual percentage will depend on a number of factors including the other security available to the project company, the payment schedule (because the greater the percentage of the contract price unpaid by the project company at the time it is most likely to draw on security ie: to satisfy DLD and PLD obligations the smaller the bank guarantee can be), the identity of the contractor and the risk of it not properly performing its obligations, the price of the bank guarantee and the extent of the technology risk
- § advance payment guarantee, if an advance payment is made, and a parent company guarantee - this is a guarantee from the ultimate parent (or other suitable related entity) of the contractor which provides that it will perform the contractor's obligations if, for whatever reason, the contractor does not perform.

7. Variations.

The project company has the right to order variations and agree to variations suggested by the contractor. If the project company wants the right to omit works either in their entirety or to be able to engage a different contractor this must be stated specifically. In addition, a properly drafted variations clause should make provision for how the price of a variation is to be determined. In the event the parties do not reach agreement on the price of a variation the project company or its representative should be able to determine the price.

This determination is subject to the dispute resolution provisions. In addition, the variations clause should detail how the impact, if any, on the performance guarantees is to be treated.

For some larger variations the project company may also wish to receive additional security. If so, this must also be dealt with in the variations clause.

8. Defects liability.

The contractor is usually obliged to repair defects that occur in the 12 to 24 months following completion of the performance testing. Defects liability clauses can be tiered. That is, the clause can provide for one period for the entire facility and a second, extended period, for more critical items.

9. Intellectual property.

The contractor warrants that it has rights to all the intellectual property used in the execution of the works and indemnifies the project company if any third parties' intellectual property rights are infringed.

10. Force majeure.

The parties are excused from performing their obligations if a force majeure event occurs. (Excusable, non compensable)

“Force Majeure” shall mean any event beyond the control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:

- a) War, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war.
- b) Rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts.
- c) Strike, sabotage, unlawful lockout, epidemics, quarantine and plague.
- d) Earthquake, fire, flood or cyclone, or other natural or physical disaster

11. Suspension.

The project company usually has right to suspend the works.

12. Termination.

This sets out the contractual termination rights of both parties. The contractor usually has very limited contractual termination rights. These rights are limited to the right to terminate for non-payment or for prolonged suspension or prolonged force majeure and will be further limited by the tripartite or direct agreement between the project company, the lenders and the contractor.

The project company will have more extensive contractual termination rights. They will usually include the ability to terminate immediately for certain major breaches or if the contractor becomes insolvent and the right to terminate after a cure period for other breaches. In addition, the project company may have a right to terminate for convenience. It is likely the project company's ability to exercise its termination rights will also be limited by the terms of the financing agreements.

13. Performance specification.

Unlike a traditional construction contract, an EPC Contract usually contains a performance specification. The performance specification details the performance criteria that the contractor must meet. However, it does not dictate how they must be met. This is left to the contractor to determine.

A delicate balance must be maintained. The specification must be detailed enough to ensure the project company knows what it is contracting to receive but not so detailed that if problems arise the contractor can argue they are not its responsibility.

Whilst there are, as described above, numerous advantages to using an EPC Contract, there are some disadvantages.

These include the fact that it can result in a higher contract price than alternative contractual structures. This higher price is a result of a number of factors not least of which is the **allocation of almost all the construction risk to the contractor**. This has a number of consequences, one of which is that the contractor **will have to factor into its price the cost of absorbing those risks**. This will result in the contractor building contingencies or reserves into the contract price for events that are unforeseeable and/or unlikely to occur.

If those contingencies or reserves were not included the contract price would be lower. However, the project company would bear more of the risk of those unlikely or unforeseeable events. Sponsors have to determine, in the context of their particular project, whether the increased price is worth paying.

As a result, sponsors and their advisers must critically examine the **risk allocation** on every project. ***Risk allocation should not be an automatic process. Instead, the project company should allocate risk in a sophisticated way that delivers the most efficient result.***

For example, if a project is being undertaken in an area with unknown geology and without the time to undertake a proper geotechnical survey, the project company may be best served by bearing the site condition risk itself as it will mean the contractor does not have to price a contingency it has no way of quantifying.

This approach can lower the risk premium paid by the project company. Alternatively, the opposite may be true. The project company may wish to pay for the contingency in return for passing off the risk which quantifies and caps its exposure. This type of analysis must be undertaken on all major risks prior to going out to tender.

Another consequence of the risk allocation is the fact that there are relatively few engineering and construction companies that can and are willing to enter into EPC Contracts. As mentioned in the Introduction some bad publicity and a tightening insurance market have further reduced the pool of potential EPC Contractors. The scarcity of EPC Contractors can also result in relatively high contract prices.

Another major disadvantage of an EPC Contract becomes evident when problems occur during construction. In return for receiving a guaranteed price and a guaranteed completion date, the project company cedes most of the day-to-day control over the construction.

Therefore, project companies have limited ability to intervene when problems occur during construction. The more a project company interferes the greater the likelihood of the contractor claiming additional time and costs. In addition, interference by the project company will make it substantially easier for contractors to defeat claims for liquidated damages and defective works.

Obviously, ensuring the project is completed satisfactorily is usually more important than protecting the integrity of the contractual structure. However, if a project company interferes with the execution of the works they will, in most circumstances, have the worst of both worlds. They will have a contract that exposes them to liability for time and costs incurred as a result of their interference without any corresponding ability to hold the contractor liable for delays in completion or defective performance.

The same problems occur even where the EPC Contract is drafted to give the project company the ability to intervene. In many circumstances, regardless of the actual drafting, if the project company becomes involved in determining how the contractor executes the works then **the contractor will be able to argue that it is not liable for either delayed or defective performance.**

As a result, it is vitally important that great care is taken in selecting the contractor and in ensuring the contractor has sufficient knowledge and expertise to execute the works. Given the significant monetary value of EPC Contracts, and the potential adverse consequences if problems occur during construction, the **lowest price should not be the only factor used when selecting contractors.**

14. Risk Management:

The risk management plan typically includes the following ten components:

1. Methodology
2. Roles and responsibilities
3. Budgeting
4. Timing
5. Risk categories
6. Definitions of risk probability and impact
7. Probability and impact matrix
8. Revised stakeholders' tolerances for risk
9. Reporting formats
10. Tracking information

1. Methodology

Methodology describes:

- The tools, methods, and sources of information that will be used to perform risk management, including how risks will be identified, analyzed, and categorized;
- How risk response plans will be prepared, implemented, and monitored; and
- How risk triggers will be monitored.

2. Roles and Responsibilities

The roles and responsibilities section defines who does what during all risk management activities. In particular, it specifies who will direct and manage risk management activities, this person may be the project manager or a designated risk manager for the project.

3. Budgeting

The budget establishes the anticipated cost of the risk management activities and the associated risk response plans, including contingency reserves.

4. Timing

The timing describes how often risk management activities will be performed, and when they will take place within the project schedule.

5. Risk Categories

Risk management deals with eventualities that might affect the project but are not documented in the project management plan. This means thinking not only of problems that have occurred with this kind of work, organization, or project approach, but also imagining problems that have never occurred before, but may occur during the project.

The basic purpose of the Risk Identification process (presented in a subsequent section of the course) is to ensure that as many of these eventualities as possible are considered. To do this, it is helpful to have a list of **risk categories** that the project team will address, so that the process is as comprehensive as possible. The risk categories generated during the Risk Management Planning process will be an input to the Risk Identification process.

There is no single, standard list, but there are good starting points from which the team can build. Agreeing on the categories and making the list complete and practical is one of the first steps in identifying the risks themselves. Considering each risk category should help the team generate ideas on risk events specific to those categories.

Most risks fall into one of several broad categories; however, any project may run unique risks.

Risk categories are tools that:

- Enable the project team to more efficiently analyze and respond to risks with common characteristics; and
- Ensure that no potential sources of risk will be overlooked during the subsequent Risk Identification process.

Risk categories can be structured to provide different levels of groups for different risk management purposes or to provide greater scope or more focus as needed during risk analysis and response planning.

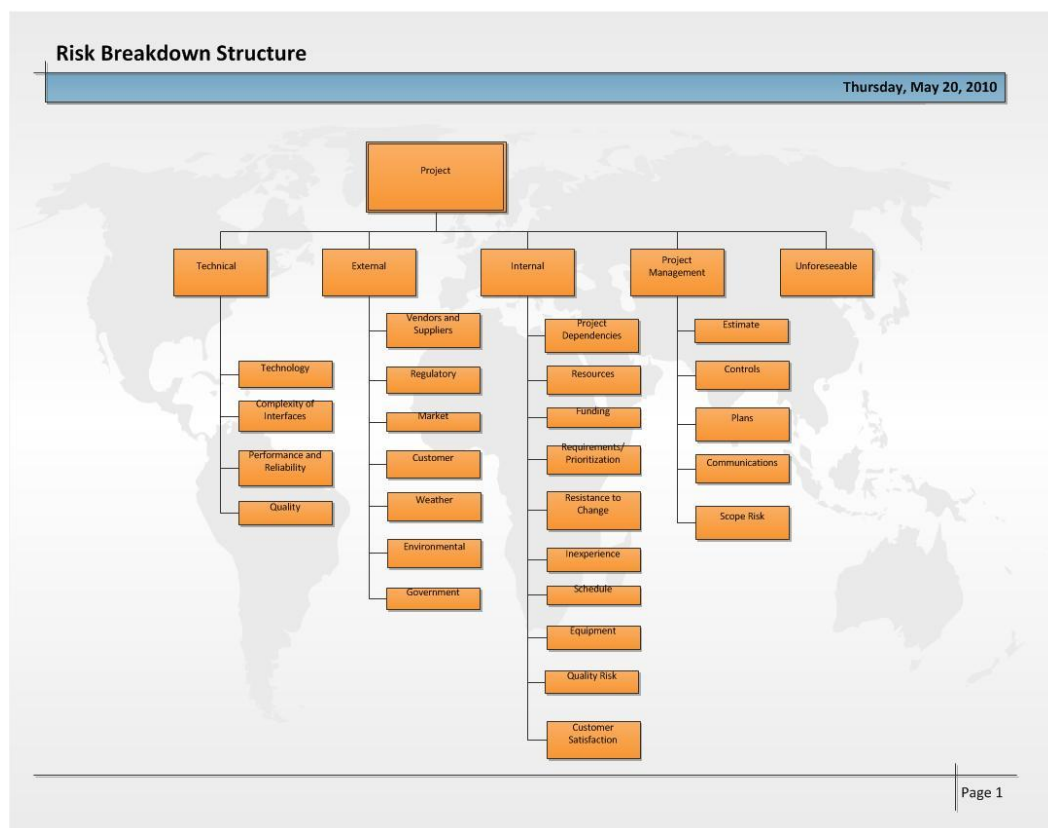
Typical Risk Categories	Description
Technology	Technology or technical approach chosen to achieve the project objectives
Time	Schedule, project completion objectives, other project time-related issues
Contractor capabilities	Ability of contractors or other vendors to achieve project objectives
Interfaces	Work in a multi-project environment, or interfaces with existing operational activities
Safety	Occupational safety, industrial safety, and potential for contamination
Environmental	Environmental laws, licenses, and permits
Regulatory involvement	Involvement of any regulatory agency such as EPA or DHEC, or by local, state, and national governments
Political visibility	Significance or visibility to local, state, or national governments
Intellectual property	Availability and cost of using key technologies and techniques for critical project activities
Involvement of key stakeholders	Involvement by someone other than a primary owner for decision-making and management
Product and project complexity	Issues with design criteria, functional requirements, complex design features, or the condition of existing documentation
Labor skills availability and productivity	Adequate resources, specialty resources, rapid labor force build-up, exposure to environmental extremes
Number of locations/site access/site ownership	Site ownership and access issues
Funding/cost sharing	Project duration and involvement/funding by other parties
Magnitude and type of contamination	Presence of hazardous or mixed waste
Quality requirements	Requirement for precision work or other QA requirements
Public involvement	Citizen interest or involvement

Risk Breakdown Structure (RBS)

Risk Breakdown Structures

A risk breakdown structure (RBS) is a hierarchical, multi-tiered organization of the risk categories. When risks are being analyzed, grouping them this way makes it possible to gather and review together risks with a common characteristic, such as their cause, or the phase or activity in which they occur.

This approach to reviewing risks that appear together in the risk breakdown structure increases the efficiency of investigating their causes, and may also increase leverage when risk response plans are developed. For example, risks with similar or a shared cause in a particular process step may be mitigated by the same process change.



Liquidated Damages under EPC Contracts

By its very nature, an engineering, procurement and construction contract (an "**EPC Contract**") is a sophisticated form of construction agreement commonly used for realizing large scale infrastructure projects in complex sectors such as energy, transportation, irrigation, and so forth.

Not only do the guarantees provided by the contractor under an EPC Contract make it attractive for the employer, but its "compact" and "safe" nature is also a key trait.

In short, what we call an EPC Contract today is a contract in which the contractor assumes the design, engineering, procurement, construction and turn-key hand-over of a facility for a price; whereas, the main undertaking of the employer is to pay the contract price.

Different from other forms of construction agreements, EPC Contracts provide broad undertakings for the contractor to facilitate the employer's life.

Thus, EPC Contracts became a *sine qua non* in the Build-Operate-Transfer ("**BOT**") or Public Private Partnership ("**PPP**") projects that are project financed (i.e. where there is no, or limited, recourse to sponsors for repayment of financing), where multiple parties are involved, such as sponsors, investors, and public authorities, they rely on EPC Contracts in order to mitigate a projects' construction risks.

An "EPC Contract" itself is not specifically provided for under local laws. Being classified as a "hybrid" contract, combining elements of several different contract types, several characteristics of EPC Contracts fall within the scope of agreements for work, where one party (the contractor) assumes the obligation to complete a project, and the other party (the employer) undertakes to pay the contract price.

In a PPP or BOT project, multiple parties assume various risks of diverse nature, such as political risk, currency risk, force majeure risk, commercial risk and, finally, construction risk, and distribute these amongst themselves, usually to the party who is best able to manage and absorb that risk. Although the parties' control over the former four risks is relatively low, the latter may still be managed through EPC Contracts.

The contractor's failure to complete the works within the pre-estimated timeframes and milestones constitutes one of the most important factors in construction risk. As noted above, EPC Contracts are preferred mainly in multi-party projects, where any delay of the contractor results in the employer's delay *vis-à-vis* another party at the horizontal level, and the project not being completed on time and in accordance with the financial model.

Furthermore, as delays impose unanticipated financial burden on the projects, the funders will also be concerned about how these are dealt with under EPC Contracts. Among many others, another noteworthy concern is that continuous delays towards completion of the construction works will result in delays in the commencement of the operations of the facility and in the generation of cash flow.

In order to cope with these problems, liquidated damages provisions are used in EPC Contracts. Further, in general, the parties also tend to determine liability caps, *i.e.* the highest limits for which a contractor (or an employer) can be held liable.

Nevertheless, labeling liquidated damages provisions as "employer-friendly" clauses are not appropriate. These provisions, in fact, serve both the employer and the contractor at the same time. Having these provisions in the EPC Contract, the employer can gauge exposure to any possible damage in the event of the contractor's delay in completing the works on time.

In addition, in the event of a dispute, the employer will not be obligated to prove any actual damage or loss for indemnification.

The contractor, on the other side, can foresee the furthestmost limits of the liability that he assumes under the contract. However, generally speaking, several circumstances, such as the contractor's gross negligence, willful misconduct, claims that the contractor can recover compensation from his insurance companies, etc. are carved out from this limit and from the liability cap.

Most EPC contract templates set forth similar provisions for a delay event. The main principle, which may be problematical for both parties, is that in the event of a delay, the employer can terminate the agreement prior to the determined expiry date or upon completion of the works. However, although it looks like a protective provision for the employer, terminating the agreement prior to the completion of the works may not be beneficial at all times.

Although a common EPC contract entitles the employer to terminate the contract in the event it is clearly understood that the completion will be delayed, both parties of an EPC Contract would, most likely, not seek to break the deal at the first instance of distress.

As we see in many cases, in a BOT or PPP project, the employer is under an obligation towards other parties (*e.g.*, the public authority procuring the works, the institutions funding the project, etc.) to have the construction works performed and completed by a specific date and take the facility into operation status.

Even in some cases, temporary underperformance of the works may also be preferable in order to achieve the milestones, rather than to terminate the contract. In addition, when the complexity of the projects and the number of different parties are taken into consideration, finding another contractor, and negotiating a new contract once again would be very time-consuming and cost-prohibitive.

Accordingly, in the event a penalty is imposed for the contractor's failure to fulfil an obligation at a specific location, or by a particular date, the employer may require the contractor to pay the penalty even though he did not suffer any damages due to the contractor's delay, together with full performance of the uncompleted works.

It is observed that, in general, the parties determine a fixed monetary amount as the contractual penalty. On the other hand, any formulation other than a monetary amount can also be stipulated in the contract; the amount of the penalty is not required to be explicitly set forth in the contract.

Most contract forms allow the parties to a contract to freely determine the amount of the contractual penalty. In principle, in the event of a dispute, the court may decrease the amount of the contractual penalty.

In the event the employer incurs any damage higher than the penalty amount, the contractor will not be obligated to compensate such exceeding amount, unless the employer proves the contractor's fault as well as the damages amount that exceed the penalty amount.

Risk Management Plan Checklist

The risk management checklist should be completed as the risk management plan is developed, and should be referred to at each planning meeting or review of the risk management plan.

CHECKLIST

A. Methodology

- Does the plan describe how it was developed, and how it will be maintained?
- Does the plan describe how Risk Identification will be carried out?
- Does the plan describe how Qualitative Risk Analysis will be carried out?
- Does the plan describe how Quantitative Risk Analysis will be carried out?
- Does the plan describe how Risk Response Planning will be carried out?
- Does the plan describe how Risk Monitoring and Control will be carried out?

B. Roles and Responsibilities

- Who will direct all risk management activities?
- Who has been designated to participate in the risk management group's work sessions for risk assessment and Risk Response Planning?
- What are the duties of the participants in the risk management group's work sessions, including preparation, outside research, and documentation?
- What governing body will oversee the execution of risk management activities?
- Who represents internal stakeholders in risk management activities?
- Who represents external stakeholders in risk management activities?

C. Budgeting

- Have all risk management activities been budgeted?
- Have contingency reserves for cost been set aside to accommodate residual and secondary risks?

D. Timing

- Has frequency been determined for all regularly occurring risk management activities, such as risk review sessions?
- Have all risk management activities been incorporated into the project schedule?

E. Risk Categories

- If a set of standard risk categories is available in the organization, was it adopted for use on the current project?
- Has the set of risk categories been tailored to suit the characteristics of the current project?
- If a risk breakdown structure (RBS) will be used, has it been developed yet?

F. Definitions of Risk Probability and Impact

- Has a scale of terms been defined for different levels of risk probability?
- Has a scale of terms been defined for different levels of risk impact?

G. Probability and Impact Matrix

- Has a matrix been constructed reflecting all possible combinations of risk impact and probability levels?
- Have the entries in the probability and impact matrix been stratified into a small number of overall risk levels?

H. Revised Stakeholder Tolerances

- Have the normal risk tolerances of all stakeholders been reviewed and determined?
- Have any of the stakeholders' risk tolerances been temporarily relaxed or tightened for this particular project?

I. Reporting Formats

- Has a standard entry form for the various sections of the risk register been developed, including the probabilistic project analysis and the revised project objectives, as well as the risk response plans?
- Have report layouts been defined for the periodic reporting of risks to the

stakeholders?

- Has a form been designed for stakeholders to report the results of implementing their risk response plans?
- Has a form been designed for identifying new risks?

J. Tracking

- Has a repository been set up to collect risk management work products?
- Are the minutes of risk review meetings being collected and stored in the repository?
- Are the start and stop dates of risk management activities being reported?
- Are all the significant data concerning risk management (reports, notifications, memos) that are reported to stakeholders being recorded in the repository?
- How are the audits of the risk management activities going to be carried out?

Being Proactive in Risk Identification

Using a proactive approach to identify risks is far better than waiting for the problems to arise on their own. Being proactive has the following benefits:

- Anticipating risks allows the participants to become more comfortable discussing and analyzing circumstances and events that would normally cause anxiety. By handling the topics in a methodical way, participants are reassured that the risks will be successfully managed; and
- Analyzing the potential for risk helps ensure that all areas of potential risk will be fully explored and that identified risks will receive balanced treatment, regardless of personal biases and influences.

One aspect of the methodical approach involves separating the identification of **positive risks** from the identification of **negative risks**. It is usually best to provide separate agenda time or even to set up separate risk assessment sessions for these two kinds of risks.

The reason for this is that thinking about negative risks tends to dominate the participant's attention since anxiety is such a powerful emotion. If the two types of risk are considered in the same period, the positive risks will tend to get overlooked or only reviewed in a cursory manner.

Some risks will be seen to have both positive and negative impacts, depending on the actions taken. For example, a risk that a task will take longer than expected may also present an opportunity to finish sooner than expected.

Checklist Analysis Advantages and Disadvantages

Advantages of Checklist Analysis

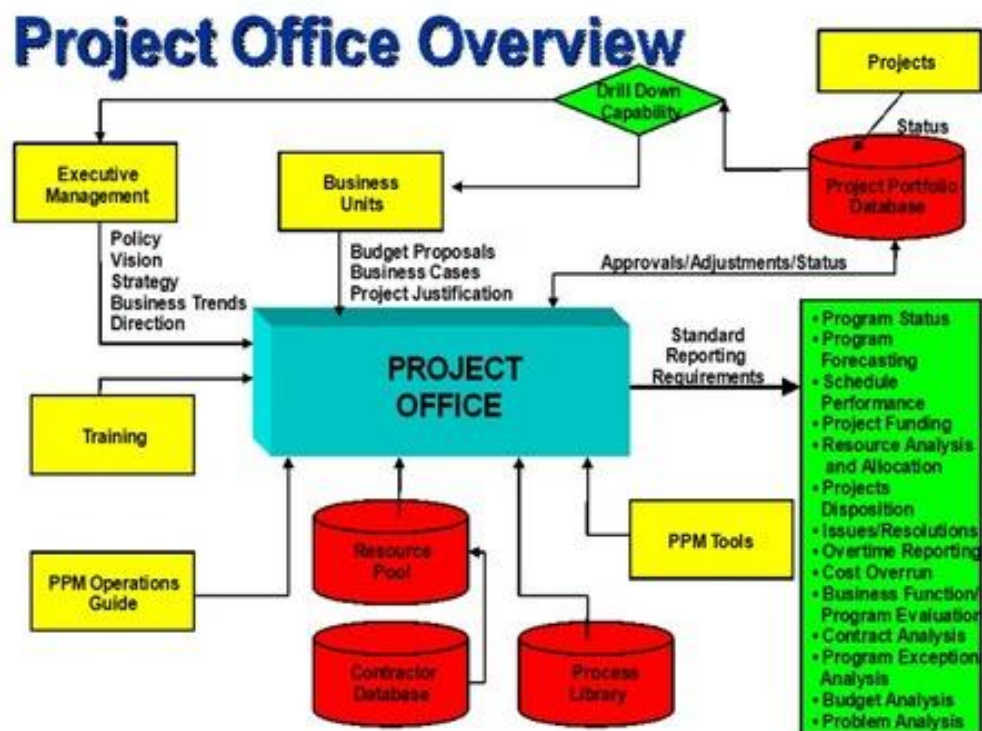
The advantages of using checklist analysis to identify risks are:

- Checklists are helpful when they reflect lessons learned from previous projects; and
- Checklists are simple and efficient.

Disadvantages of Checklist Analysis

The disadvantages of using checklist analysis to identify risks are:

- Checklists can be limiting if the team automatically assumes that the checklists are comprehensive and complete, which is rarely the case; and
- A large project is likely to require a lengthy checklist and no checklist can be wholly adequate without being tailored to the current project.



EPCI Contracts

EPCI stands for **Engineering, Procurement, Construction and Installation**.

It is a common form of contracting arrangement within Offshore construction. Under an EPCI contract, the contractor will design the structure(s), procure the necessary materials, undertake construction and transportation, and set it up at the offshore site.

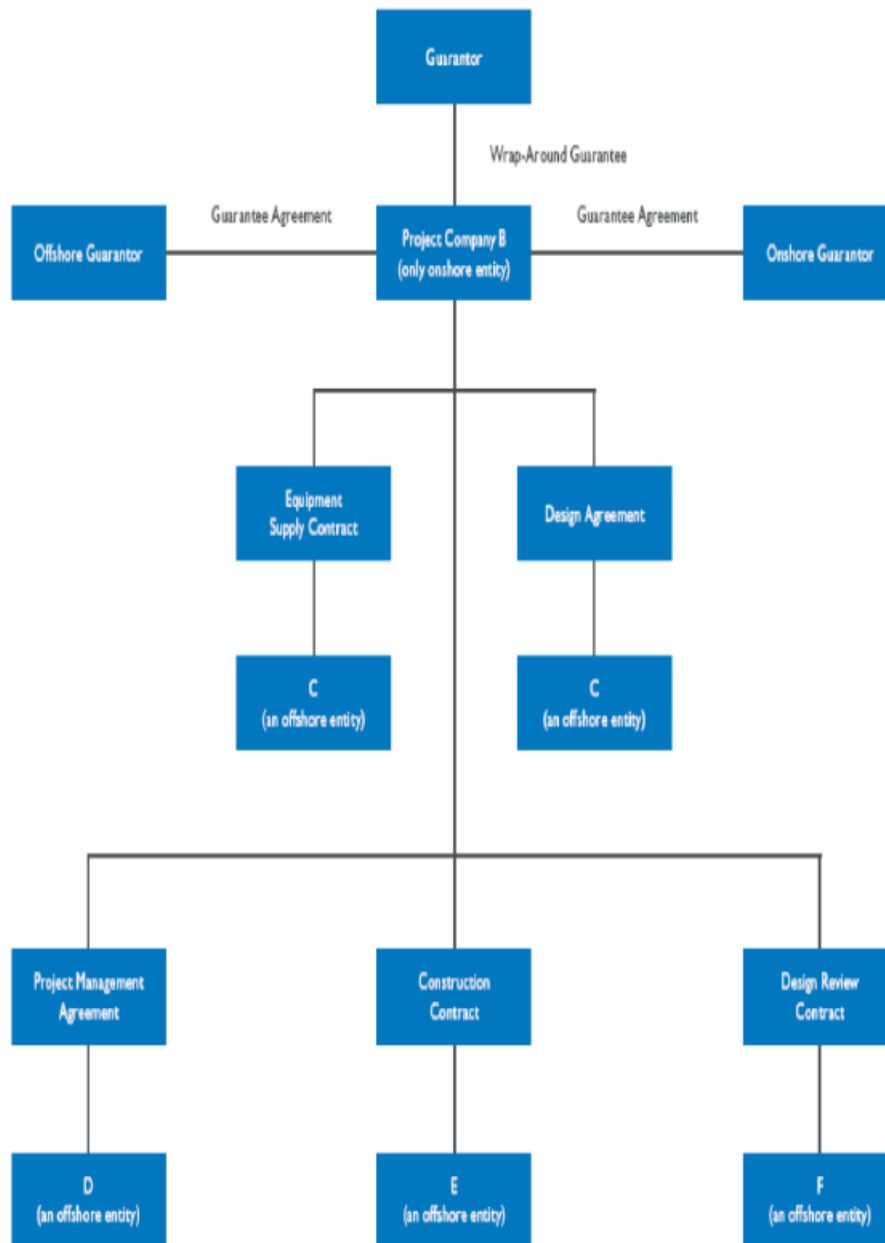
The contractor does this either through own labour or by subcontracting part of the work.

The contractor carries the project risk for schedule as well as budget in return for a fixed price, called Lump sum or LSTK depending on the agreed scope of work.

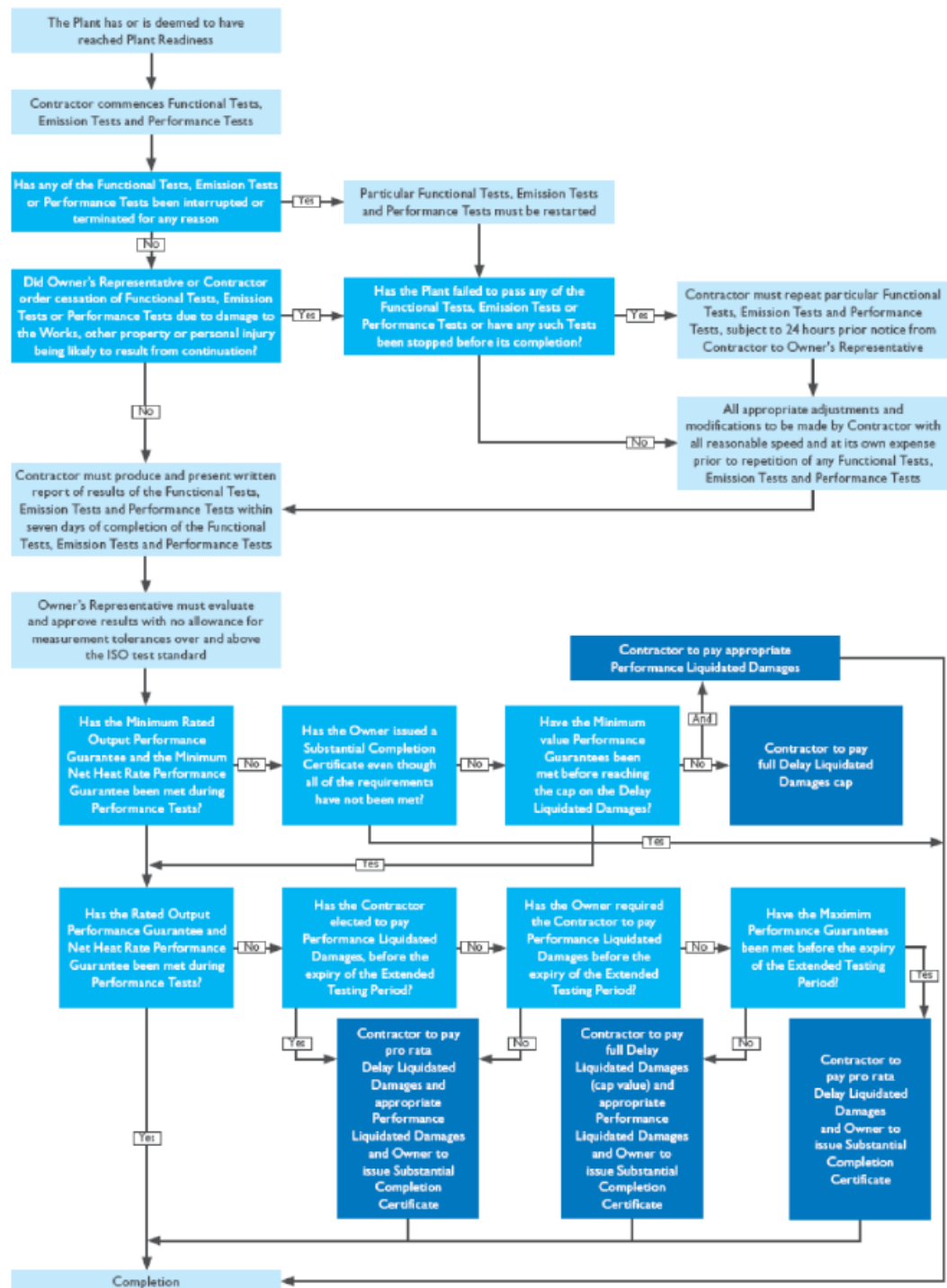
In EPCI contracts, the contractor rarely carries the project risk *unconditionally*. Rather, contractor and customer have detailed discussions on the division of the risk.

Risk of delays and cost overruns due to lacking Weather windows is an example of a typical risk that may be borne by the customer rather than the contractor.

EXAMPLE SPLIT EPC STRUCTURE



PERFORMANCE GUARANTEES AND TESTING



BOT CONTRACTS

BOT- like Contractual arrangements - refer to any of the following contractual arrangements or schemes as well as other variations.

- o **Build-and-transfer (BT)** - a contractual arrangement whereby the project proponent undertake the financing and construction of a given infrastructure or development facility and after its completion turns it over to the government agency or local government unit concerned, which shall pay the proponent on an agreed schedule its total investment expended on the project, plus a reasonable rate of return thereon. This arrangement may be employed in the construction of any infrastructure or development project, including critical facilities which, for security or strategic reasons, must be operated directly by the government.

- o **Build-lease-and-transfer (BLT)** - a contractual arrangement whereby a project proponent is authorized to finance and contract an infrastructure or development facility and upon its completion turns it over to the government agency or local government unit concerned on a lease agreement for a fixed period after which ownership of the facility is automatically transferred to the government agency or local government unit concerned.

- o **Build-operate-and-transfer (BOT)** - a contractual arrangement whereby the project proponent undertakes the construction, including financing, of a given infrastructure facility, and the operation and maintenance thereof. The project proponent operates the facility over a fixed term during which it is allowed to charge facility users appropriate tolls, fees, rentals, and charges not exceeding those proposed on its bid or as negotiated and incorporated in the contract to enable the project proponent to recover its investment and operating and maintenance expenses in the project. The project proponent transfers the facility to the government agency or local government unit concerned at the end of the fixed terms which shall not exceed fifty (50) years. This shall include a supply and operated situation which a contractual arrangement whereby the supplier of equipment and machinery for a given infrastructure facility, if the interest of the government so requires, operates the facility providing in the process technology transfer and training to Filipino nationals.

- o **Build-own-and-operate (BOO)** - a contractual arrangement whereby a project proponent is authorized to finance, construct, own, operate and maintain an infrastructure or development facility in which the proponent is allowed to recover its total investment, operating and maintenance costs plus a reasonable return by collecting tolls, fees, rentals or

other charges from facility users. Under this project, the proponent which owns the assets of the facility may assign its operation and maintenance to a facility operator. One supplementary variation of this is the BOOT which make the project transferable after it has been owned.

- o **Build-transfer-and-operate (BTO)** - a contractual arrangement whereby an agency/LGU contracts out the building of an infrastructure facility to a private entity such that the contractor builds the facility on a turn-key basis, assuming cost overruns, delays and specified [performance](#) risks. Once the facility is commissioned satisfactorily, title is transferred to the implementing agency. The private entity, however, operates the facility on behalf of the implementing agency under an agreement.

- o **Contract-add-and-operate (CAO)** - a contractual arrangement whereby the project proponent adds to an existing infrastructure facility which it is renting from the government and operates the expanded project over an agreed franchise period. There may or may not be a transfer arrangement as regards the added facility provided by the project proponent.

- o **Develop-operate-and-transfer (DOT)** - a contractual arrangement whereby favorable conditions external to a new infrastructure project to be built by the project proponent are integrated into the arrangement by giving the same the right to develop adjoining property, and thus, enjoy some of the benefits the investment creates such as higher property or rent values.

- o **Rehabilitate-operate-and-transfer (ROT)** - a contractual arrangement whereby an existing facility is turned-over to the private sector to refurbish, operate and maintain for a franchise period, at the expiry of which the facility is turned-over to the government. The term is also used to describe the purchase of an existing facility from abroad, importing, refurbishing, erecting and consuming it within the host country.

- o **Rehabilitate-own-and-operate (ROO)** - a contractual arrangement whereby an existing facility is turned over to the private sector to refurbish and operate with no time limitation imposed on ownership. As long as the operator is not in violation of its franchise, it can continue to operate the facility in perpetuity.

NEC Engineering and Construction Contract

The New Engineering Contract (NEC), or **NEC Engineering and Construction Contract** is a formalized system created by the Institution of Civil Engineers that guides the drafting of documents on civil engineering and construction projects for the purpose of obtaining tenders, awarding and administering contracts. As such they legally define the responsibilities and duties of Employers (who commission work) and Contractors (who carry out work) in the Works Information.

The Works Information consists of the Contract Data part one (Data provided by the Employer) and Contract Data part two (Data provided by the Contractor). Several approaches are included making it a family of options. It is used in the UK and internationally in countries including New Zealand, Australia, Hong Kong and South Africa.

There have been three editions, the first in 1993, the second in 1995, and the most recent in 2005. The June 2005 edition of the NEC3 was amended in June 2006, and again in April 2013.

Characteristics

The NEC is a family of standard contracts, each of which has these characteristics:

- *Its use stimulates good management of the relationship between the two parties to the contract and, hence, of the work included in the contract.*
- *It can be used in a wide variety of commercial situations, for a wide variety of types of work and in any location.*
- *It is a clear and simple document - using language and a structure which are straightforward and easily understood.*

The NEC complies fully with the **Achieving Excellence in Construction** (AEC) principles. The Efficiency & Reform Group of The UK Cabinet Office recommends the use of NEC3 by public sector construction procurers on their construction projects.

Options

The NEC contracts now form a suite of contracts, with NEC being the brand name for the "umbrella" of contracts. When it was first launched in 1993, it was simply the "New Engineering Contract". This specific contract has been renamed the "Engineering and Construction Contract" which is the main contract used for any construction based project.

It now sits alongside a number of other contracts that together should mean that the NEC suite is suitable for what ever stage of a lifecycle the project is at and for any party within a project. The contracts available within the suite are:

Engineering and Construction Contract (ECC):

Suitable for any construction based contract between an Employer and a Contractor. It is intended to be suitable for any sector of the industry, including civil, building, nuclear, oil & gas, etc.

Within the ECC contract there are six family level options of which the Employer will choose what he deems to be the most suitable and give him the best option/value for money on that project:

- Option A: Priced contract with activity schedule
- Option B: Priced contract with bill of quantities
- Option C: Target contract with activity schedule
- Option D: Target contract with bill of quantities
- Option E: Cost-reimbursable contract
- Option F: Management contract

These options offer a framework for tender and contract clauses that differ primarily in regard to the mechanisms by which the contractor is reimbursed and how risk is allocated/motivated to control costs.

The core clauses (of the main option listed above) are used in conjunction with the secondary options and the additional conditions of contract. The Efficiency and Reform group of The Cabinet Office in the UK (formerly the OGC) has published generic public sector Z-clauses for the use with **NEC3** contracts.

The clauses of these options can be adapted by tenders for sub-contractors and designers by choosing one of the contracts below.

The Engineering and Construction Subcontract Contract (ECS)

Very similar in detail and complexity of contractual requirements to the ECC contract above, but allows the contractor to sub-let the project to a subcontractor imposing most of the clauses that he has within his headline contract. There is very little difference between the ECC and the ECS, other than the names of the parties are changed (contractor and subcontractor) and some of the timescales for contractual responses are altered to take into account the timescales required in the ECC contract.

The Engineering and Construction Short Contract (ECSC)

This is an abbreviated version of the ECC contract and most suitable when there is considered "low risk" (not necessarily low value) on a project with little change expected. This contract is still between the employer and contractor but does not use all of the processes of the ECC making it simpler and easier to manage and administer.

The Engineering and Construction Short Subcontract (ECSS)

Allows the contractor to sub-let a contract down the line to a subcontractor on a low risk project when his contract with the employer is an ECSC.

The Professional Services Contract (PSC)

This contract is for anyone providing a service, rather than doing any physical construction works. Designers are the most obvious party that fit into this category. Whilst they are producing a design for an employer or contractor, they would sign up and follow the clauses within the PSC.

Most of the clauses within this contract are the same as that in the main ECC contract, so that all contractors, designers and subcontractors have pretty much the same obligations and processes to follow as each other.

Framework Contract (FC)

Parties enter into a "framework" of which work packages will then be let during the life of that framework. Any individual projects will then be awarded using one of the other contracts within the suite, meaning that the parties follow the headline clauses within the framework contract (which is a fairly slim contract) and then the individual clauses within the chosen contract for that package. Different work packages can be let using different contracts during the life of the framework.

Term Service Contract (TSC)

For parties on a project that is operational or maintenance based, e.g. maintaining highway signage, where the contract is to ensure that a certain standard is maintained. This contract is not generally used for constructing new works, but can include some amount of betterment. There is also a "Term Service Short Contract" where the project is a relatively low risk project and is an abbreviated version of the main TSC.

Supply Contract/Short Supply Contract (SC/SSC)

This is the Newest addition of contracts to the NEC family, being launched in 2010. This is for a supplier of supplies or goods to a project, and puts extra contractual requirements on them during their procurement/manufacture period. The Supply Contract is for big items of procurement, with the Short Supply Contract potentially being for more run of the mill procurement items on a project.

Adjudicator's Contract (AC)

If there is a dispute between the parties on a project then the Adjudicator will follow the clauses within this contract in order to come to a decision.

Guidance Notes and Flowcharts

For each of the different contracts listed above each comes with its own set of guidance notes and flowcharts which should aid understanding of the intent of the drafted clauses. The guidance notes expand on each clause to give extra substance and intent of the original drafters as to how a clause should be understood and interpreted. The flowcharts then map out each of the main processes within each contract and demonstrate how it should operate and what to do next if a party has or has not carried out the next contractual action.

History

Originally contracts in the civil engineering and construction industries were bespoke and drafted by Chancery pleaders using their knowledge of leases rather than building processes. In 1879, Royal Institute of British Architects for construction projects created RIBA forms which lead to the Joint Contracts Tribunal, JCT forms.

For civil engineering the need for a formalized approach to contracts led the Institution of Civil Engineers to produce the ICE formalized set of conditions of contract. In 1986, the ICE commissioned the development of new form of contract as it was felt that there was a need for a form that had clearer language, clearer allocation of responsibilities and reduced opportunities for contractual “gamesmanship”. In 1991, this resulted in a consultative form of the New Engineering Contract form of contract. The first edition was published in 1993.^[5] Wider use of the NEC was recommended by the Latham Report in 1994.

Comparison

The following demonstrates the differing approaches to drafting in the NEC and ICE forms of contract using the illustration of circumstances when the contractor is entitled to additional time and cost for physical conditions.

NEC Engineering and Construction Contract Second Edition Clause 60.1 (12)

- are within the site.
- are not weather conditions and
- which an experienced contractor would have judged at the Contract Date to have such a small chance of occurring that it would have been unreasonable for him to have allowed for them.

ICE Conditions of Contract Sixth Edition Clause 12(1)

If during the execution of the Works the Contractor shall encounter physical conditions (other than weather conditions or conditions due to weather conditions) or artificial obstructions which conditions or obstructions could not in his opinion reasonably have been foreseen by an experienced contractor the Contractor shall as early as practicable give written notice thereof to the Engineer.

Guidance Notes

Guidance Notes and Flow Charts are published by the ICE. These notes are supplemented by the Frequently Asked Questions sections of the NEC website.^[1] Prospective users of the NEC3 contract are encouraged to study the FAQ's in order to avoid unintended contract provisions. The often unintended Option C scenario where a Contractor is paid monies in excess of the Target Cost plus maximum share provisions is specifically not addressed in the guidance notes / Frequently Asked Questions.

Other common misinterpretations are minutes of meetings as communications, deleted work and paying for correcting defects. Employers often utilise the additional conditions of contract (Z-clauses) to amend or delete contract provisions relating to these items.

Footnotes

1. [^] R Gerard (2005). [Relational contracts—NEC in perspective](#). Lean Construction Journal, 2, 80-86.
2. [^] Brook M. (2004). Estimating and Tendering for Construction Work Butterworth-Heinemann [ISBN 978-0-7506-5864-5](#)
3. [^] Patterson R (2007) [Introducing NEC Wellington Seminar](#)
4. [^] NEC (2005) NEC3 Engineering and Construction Contract Thomas Telford Ltd [ISBN 978-0-7277-3359-7](#)
5. [^] Broome JC, Hayes RW. (1997). A comparison of the clarity of traditional construction contracts and of the New Engineering Contract. International Journal of Project Management, 15, 255-261. [doi:10.1016/S0263-7863\(96\)00078-6](#)
6. [^] www.neccontract.com



PROCESSES FOR PREVENTION, CONTROL AND EARLY RESOLUTION OF DISPUTES

INTRODUCTION

CPR presents in this booklet a suite of practice materials that will explain some of the wide variety of available processes for prevention, control and early resolution of disputes, and provide useful practice information on how these processes can best be deployed to advantage in the negotiation and drafting of business agreements and corporate governance protocols.

1. A PRACTICAL EXERCISE FOR BUSINESS LEADERS AND THEIR INSIDE COUNSEL

Questions which should be addressed to every corporate leader, manager, and inside counsel:

1. During the past two years, has your business experienced any disputes in its “business-to-business” relationships?
2. If so, have any of those disputes been significant enough to:
 - a. Cause your business to incur substantial “transaction costs” (*i. e.*, lawyers’ and experts’ fees, etc., as contrasted with damage payments to the other party)* to obtain resolution of the dispute in litigation, arbitration, or mediation?
 - b. Interfere with the efficiency or success of the underlying business transaction, activity or enterprise?
 - c. Damage future relationships with the other party to the dispute?
3. Would you like to be able to minimize the number and severity of business to business disputes?

If you answered “yes” to any of these questions, then you should find these CPR Dispute Reduction Practice Materials useful to you and your business.

There are ways to prevent, reduce, manage and control disputes in business to business relationships

There are proven techniques that help businesses to anticipate, prevent, manage and control the growth of problems and unexpected events that often escalate into harmful disputes with other businesses.

* “Transactional resolution costs” have been defined as “the costs that are incurred because of the presence of a dispute including direct costs (such as fees and expenses paid to lawyers, paralegals, accountants, claims consultants, and other expert), indirect costs (such as salaries and associated overhead of in-house lawyers, company managers, and other employees who

have to assemble the facts, serve as witnesses and otherwise process the dispute), and (to the extent they can be measured) hidden costs (such as the inefficiencies, delays, loss of quality that disputes cause ... and the costs of strained business relations between the contracting parties.” Gibson, G. E., Gebken, R. J., *Decision Making, Transactional Costs and Dispute Resolution: Is There a Better Way?*

A small proactive investment of “preventive” time at the commencement of a business relationship can pay great dividends to both parties by improving relationships, insuring against disputes, and saving money for both parties.

If the parties to a business relationship were to take time during the negotiation of the terms of their relationship to jointly “think ahead” about the future course of their relationship and acknowledge the possibility that unexpected events or other problems might threaten their relationship, they could provide in their contract one or more processes that would guide both parties constructively when they are confronted with such problems.

The existence of agreed-upon processes for realistically and rationally dealing with unexpected events will channel the parties’ problem-solving efforts constructively; avoid the chaos that can ensue if there are no recognized rules for dealing with a problem; encourage the parties to “fix the problem rather than fix the blame;” and prevent a problem from escalating into an adversarial confrontation or a dispute.

Selecting preventive processes from the available menu

The selection of which processes are most appropriate to channel the parties’ problem-solving efforts should depend upon such factors as the parties’ mutual assessment of what kinds of problems might arise during their relationship, and how the parties want to deal with those problems. (*A full menu of processes, and sample language for implementing them, can be found in Section 5 of these Practice Materials, beginning on page 17.*)

Some of the available processes help the parties to align their interests through collaborative efforts or incentives. Other processes help to curb disputes by injecting a neutral “dose of reality” into a potentially divisive difference or opinion or disagreement.

An example of a “collaborative” process is Partnering, a team-building effort in which the parties establish working relationships through a mutually-developed strategy of commitment and communication. The relationship is built on trust, dedication to common goals, and understanding of each others’ individual expectations and values.

The expected benefits from such a relationship include improved efficiencies and cost effectiveness, increased opportunity for innovation, continued improvement of quality, and a lasting relationship.

Partnering is usually instituted at the beginning of a relationship by holding a retreat among all personnel involved in the enterprise who have leadership and management responsibilities, in which the participants, assisted by an independent facilitator, become acquainted with each others’ objectives and expectations, recognize common aims, develop a teamwork approach, initiate open communications, and establish non-adversarial processes for resolving potential problems.

In cases where a neutral “dose of reality” would assist in curbing a dispute in a long term relationship where an unknown variety of problems might arise, the parties, at the beginning of the relationship, might identify a wise person, known to and respected by both parties, who is familiar with the type of relationship or contract, who would be available on reasonably short notice to provide objective advice to the parties whenever the parties could not agree among themselves about how to solve a problem.

Experience has shown that the mere existence of such a respected person in whom both parties have confidence, who is familiar with the parties’ relationship and objectives, and will be available to provide advice throughout the course of parties’ relationship, encourages the parties to deal realistically with each other and thus resolve problems themselves, often without ever having to refer them to the standing neutral.

Further experience has shown that on those few occasions when the agreed-upon neutral has actually had to render advice, the parties, guided by the neutral’s “dose of reality,” have almost invariably reached a consensual solution to the problem without having to resort to any formal dispute resolution process.

Prime examples of relationships where problems can arise, and where preventive processes could help to control the escalation of problems into disputes where a standing neutral could provide valuable assistance in curbing disputes, are joint ventures, long-and medium-term supply agreements, outsourcing arrangements, and agreements for exchange or sharing of services or resources.

Some other business relationships which could benefit from such a standing neutral would be franchise agreements, and a topical example from the auto industry’s current problems: the relationship between the central organization and its major customers and franchisees -- dealers, chain owners, etc.

A full menu and description of devices, techniques and processes for preventing and controlling disputes, along with sample contract language illustrating how those processes can be implemented, is contained in Paper Number 5 in these Practice Materials.

2. “THINKING AHEAD: A “NEW PARADIGM” IN BUSINESS RELATIONSHIPS

CPR recognizes that some of the most successful businesses use principles of thinking ahead, anticipation, and prevention in their contracting relationships, both to prevent problems from occurring, and if problems and unexpected events do occur, by controlling and managing those events in ways that keep them from escalating into real disputes.

This new paradigm is characterized by a number of fairly simple, logical and straightforward principles:

- a. Both contracting parties view their relationship as one of working together to advance the business enterprise or transaction.
- b. Both contracting parties understand and respect the forces driving their opposite number.
- c. Neither seeks unfair advantage or “something for nothing”.
- d. Both parties recognize the reality that problems and unexpected events will occur during the course of their relationship.
- e. Both parties recognize the expense and waste that are inherent in an extended and escalating dispute resolution process.
- f. Therefore both parties, at the inception of the relationship, together try proactively to anticipate and identify the kinds of potential problems that might arise in the future.
- g. Based on this mutual evaluation, the parties select and set up a series of processes that will encourage cooperation, keep problems from escalating, and make certain that any disagreements are promptly resolved. (Among these techniques are such processes as: early identification of potential areas of problems and disputes, incentives to encourage cooperation, partnering, and standing neutrals.)
- h. The parties incorporate these processes into the contract that governs their relationship.
- i. The parties keep channels of communication open and functioning.
- j. When a problem or unexpected event occurs, both parties recognize that they have already committed themselves to seek a quick, fair, and equitable solution to the problem without escalation to the dispute level.
- k. Senior managers of both parties make their policies regarding dispute prevention and resolution clear to counter-parties and subordinates, and they insist on adherence.

1. All parties recognize and reward exemplary performance.

This paradigm, and its contrast with current private dispute resolution practice, can be graphically illustrated by the “**Thinking Ahead**” flow chart which appears on the next page.

The **chart** lays out two quite different paths:

The first path, on the left side, describes the current "typical" approach that most businesses and lawyers follow when they are negotiating a business deal, where the standard behavior is to deal with the possibility of future problems with penalties and perhaps a boilerplate mediation and or arbitration clause, and then describes the occurrence of problems and the typical ways that problems are handled and finally resolved, frequently with serious expense and damage to relationships.

Next, a parallel “Strategic Behavior” path on the right side of the page describes a contrasting course: a set of much more sophisticated practices that are modeled on the ideal model of construction industry preventive behavior, beginning with the collaborative anticipation of problems, agreement on processes for dealing with problems, the application of those processes when a problem occurs, solution of the problem, the avoidance of a dispute, and continuance of beneficial relationships.

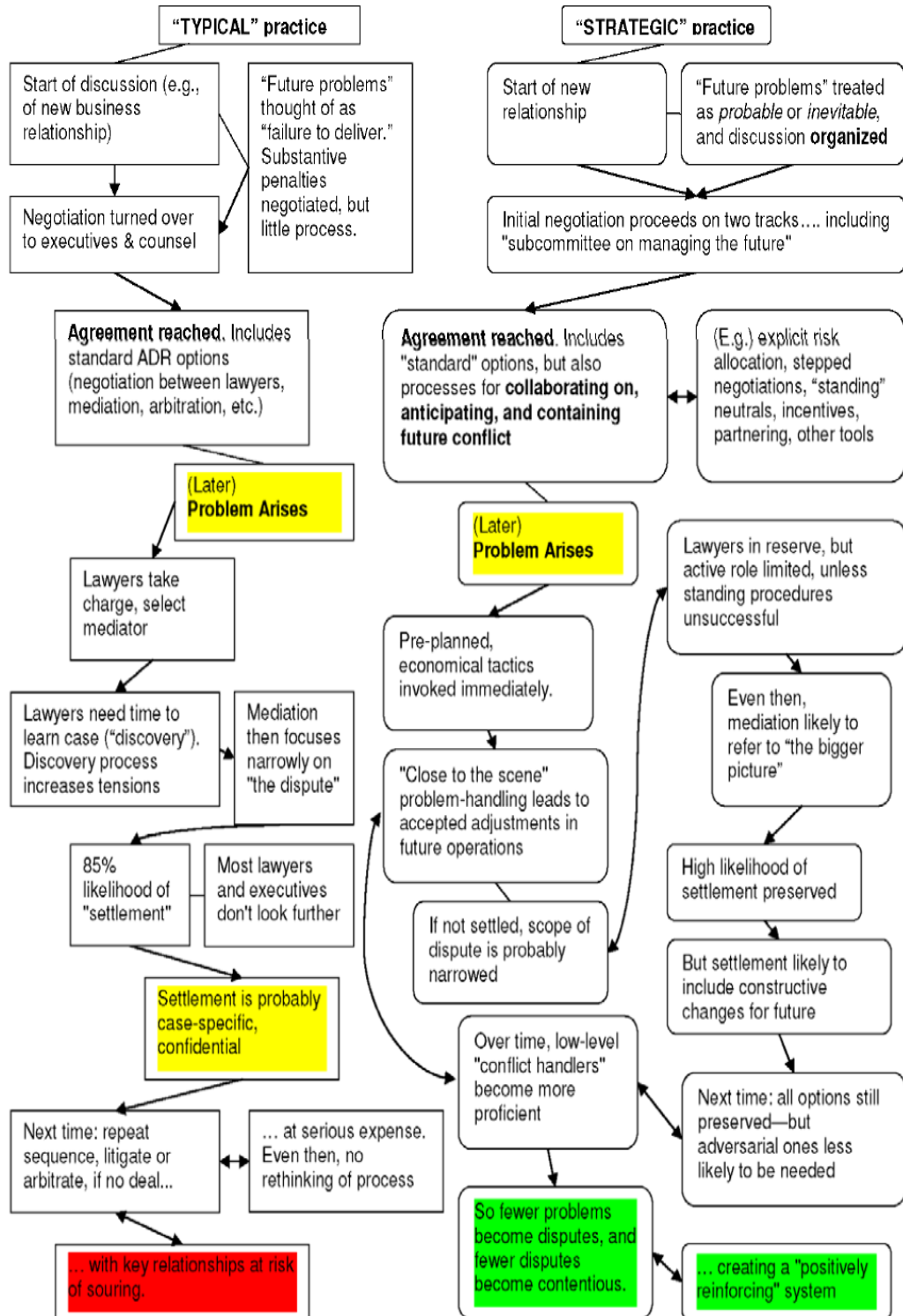
One of the most valuable features of the second Strategic Behavior chart is the concept of having the initial negotiations between the parties proceed on two tracks:

(1) The traditional “deal negotiation” track, to determine the substantive commercial aspects of the enterprise; and

(2) A second collaborative negotiating track composed of representatives of both parties who would constitute a "subcommittee on managing the future," who would try to anticipate in a non-adversarial way the kinds of problems that could come up during the course of the business relationship, and then craft mutually beneficial processes to include in the contract that would direct any such problems into constructive tracks so they could be dealt with realistically in a problem-solving, not adversarial, context.

Thinking Ahead to Avert Problems:
the "typical" approach versus the "strategic"

(basic version. © Christopher Honeyman 2008, used by permission)



3. PREVENTING AND RESOLVING CORPORATE GOVERNANCE DISPUTES

In the field of corporate governance, where relationships between various elements of the corporation's governance are governed by such documents as charters, by-laws and stockholder agreements, there are many opportunities for the relevant documents to contain agreed-upon processes for keeping inevitable differences of opinion and disagreements from escalating into harmful conflict. Corporate governance disputes primarily involve the corporation's shareholders, board members, and senior executives.

They may also involve other stakeholders who challenge the company's governance, ethics or strategy. These disputes represent a particularly fruitful area for thinking ahead, because of the high risks and costs they often represent for the company. Since the board sits at the center of the governance process, resolving a corporate governance dispute typically requires the board's attention, even if the board or individual directors are not direct parties. This potentially imposes notable time and opportunity costs even in situations where the board may have initially perceived its role as marginal.

No single "thinking ahead" strategy is sufficient for these disputes, because they fall into two broad categories, internal and external, and these require quite different strategies.

External disputes

The disputes we are calling "external" are the ones likely to come first to most peoples' minds. These involve constituencies such as dissident or dominant shareholders who seek some kind of change in the company's policies, or in the board's composition.

The constituency may also be another kind of stakeholder, such as employees or communities which have (or perceive) a systemic grievance they want the board rather than management to resolve. Anticipating this type of conflict is similar in structure and requirements to anticipating other kinds of major business conflicts discussed elsewhere in these Practice Materials, except that the stakes for the company are often higher.

The same concerns about the adverse consequences of allowing a situation to fester, accepting "rosy scenarios" which presume there will be no conflict, and other elements of common corporate blindness apply, as do the strategies recommended for averting these errors.

The only major difference is that in an external corporate governance dispute, provision should be made to have in place a process for resolving such disputes, preferably to include the prior appointment of a particularly high-status mediator, standing neutral, or other expert, in keeping with the status of many of the others involved, who can be available to intervene in the dispute.

By definition, in many situations it will be unclear who the stakeholders for a potential future dispute may be, which raises the risk that a standing neutral appointed in advance may not be perceived as neutral by all of them because they did not have an equal opportunity to participate in the selection.

Advance appointment of a standing neutral in conjunction with likely stakeholders, however, and with both advance instructions and a structure that requires the standing neutral to be responsive to other stakeholders as may be appropriate in a given situation, is imperfect but still likely to be helpful.

Internal disputes

The disputes we characterize as "internal" are quite different, both in structure and in the planning strategy necessary to avert them. These are disputes which occur among directors themselves, or between directors and the most senior members of management. Internal governance disputes often have their source in the relationship between the CEO and chairman, and/or other executive and non-executive board members.

If a significant shareholder is also a member of the board, an internal dispute can take on a three-way, board-management-shareholder character. These disputes are probably the most disruptive of all to board decision-making. Unresolved, they can injure the board's ability to function for a long time (remember the HP board dispute over the merger with Compaq?), and reduce the overall company's performance accordingly.

Yet without a subtle form of thinking ahead, this type of dispute is particularly likely to be allowed to fester -- partly because there are strong reasons for any board and particularly CEO to seek to maintain at least the *appearance* of harmony within the board. This makes for a particularly awkward situation when a dispute is looming: it is normal for at least some of those involved to deny that there is any conflict, and there is then no good way to call in an outsider for assistance without risking an open breach.

Good corporate governance in future therefore requires very particular strategies for working ahead of internal disputes. Two approaches are appropriate:

First, in order to obtain prior alignment of interests among board members and senior management, the corporation can take affirmative steps to improve communications among directors and between the board the CEO, and having board retreats where board members can identify common interests and concerns, focus on the corporate vision and mission, and formulate strategies.

Second, the board should ensure that there is an internal mediator or peacemaker *already on the board*. In one sense, this is a new form of practice for highly skilled "standing neutrals."

In another sense, it is probably time-honored: were the secrets of boards' dealings more open to researchers, a close analysis of any board which is known to have worked smoothly through corporate crises over the years would almost certainly reveal a CEO who was wise (or lucky) enough to have recruited someone with real mediation skill to join the board.

If verbatim transcripts were available, it would probably also turn out that the term "mediator" was never actually uttered, either in the recruitment, or in the occasional and vaguely stated request at a board meeting that "Jim, perhaps you could have a look at this situation and talk to everyone." (If the request is made on the phone in between board meetings, it is likely to be made considerably more forthrightly but even more privately.)

Such an innocent and apparently offhand request, made to the right director at the right time, has probably saved more companies than we will ever know.

Other examples of Standing Neutrals in a Corporate Governance Context

The concept of having already on the board one or more directors who can act as a sort of steadying influence to keep the peace can be especially useful in closely-held or family-owned corporations.

For example, in the case of a closely-held corporation where there might be deadlocks between equal owners, there are a couple of techniques that can be employed in drafting the corporate charter and by-laws that can avoid the paralysis of a deadlock by using one or more outside directors as standing neutrals:

1. One technique is for the stockholders who have evenly-divided interests to elect as a director a neutral outsider who is knowledgeable about the business and has a reputation for integrity. (An example of such a person could be the Dean of a local business school.)

This outside director is paid a significant director's fee, is furnished the key management reports that are provided to other directors, and is expected to attend all board meetings, ask questions, participate in discussions, and get a good perspective on the affairs of the company. However, this outside director has a vote only in the case of a disagreement among the "inside" directors, in which case the outside director has the deciding vote.

2. Another technique, where there are two stockholders with equal ownership and a concern about possible deadlock, is to establish a five-person board of directors, two of whom represent the evenly-matched "insiders" and three of whom are highly-respected independent "outside" directors. They all function as a real board, and each director has a vote.

The advantage of the arrangement is that in any case where the two inside directors disagree, it takes the votes of at least two of the three outside directors to carry the vote.

In the case of a corporation where there are two stockholders with a great disparity in ownership interests and a concern that the majority stockholder will ride roughshod over the minority stockholder to the detriment of the company, the charter could provide for a five-person board of directors, two of whom are appointed by the majority stockholder, one of whom is appointed by the minority stockholder, and two more highly-respected independent "outside" directors are appointed jointly by both stockholders together.

Under this system, the majority needs the vote of only one independent director, while the minority needs the vote of both independent directors. But in a case where the majority is acting abusively, the independent directors are likely to perceive the potential for abuse, and both vote with the minority stockholder.

In the case of a family-owned corporation, intra-family disputes injurious to the corporation have been avoided by appointing independent directors to the board, along with representatives of the family, to act in effect as standing neutral board members, to serve in the role of internal peacemakers.

In all of the foregoing situations, because the independent outside director(s) can control the outcome, there is an incentive for all directors to exercise good judgment and act reasonably for the best interests of the company.

Alternatively, if a board of directors did not want to have a standing neutral actually as a member of the board, it could simply identify an outside person in whom its members have confidence, and appoint that person to be available to serve as a standing neutral resource in the event that the board members have a disagreement.



4. THE CASE FOR INCLUDING PROCESSES FOR PREVENTION AND CONTROL OF DISPUTES IN BUSINESS AGREEMENTS*

Every relationship carries with it the potential for disputes. Common experience has demonstrated that problems, difficulties, differences of opinion, disagreements and disputes can occur at any time, even in the best of families and businesses. Given this reality of the business world, the parties to a business relationship, at the time they enter into that relationship, should always address the subject of how they are going to handle any problems or disputes that may arise between them.

At this point they have a unique opportunity to exercise rational control over any disagreements that may arise, by specifying that any disagreements be processed in ways that are likely to avoid litigation, preferably by agreeing on a dispute resolution “system” that will first seek to prevent problems and disputes, and next establish a process for *resolution* of any disputes. There are many excellent reasons for taking advantage of the opportunity:

Disadvantages of Litigation. Resolution of a business problem through litigation:

- Deprives business leaders of the opportunity to maintain control over their disputes.
- Takes too long. It will take at least several months (and in some jurisdictions several years) to get a civil case to trial; appeals can lengthen the process by a year or more. This delay can create uncertainty in business planning, adversely affect cash flow, and have other disruptive effects on the business.
- Is too expensive. It costs a lot to bring even the simplest business dispute to trial, in lawyers’ fees, time and energy of business people, and costs of experts and consultants.
- Lacks expertise. The resolution of business and technical disputes requires expertise and sophistication. It is difficult to find judges with the qualifications to resolve such issues.
- Is too public. Court filings and proceedings are matters of public record. They are valuable sources of information for business competitors, and, if they are juicy enough or it’s a slow news day, they can be reported in the media.
- Is too uncertain. Litigation is a very blunt instrument. It is often very difficult to predict how a judge or appellate court will ultimately resolve a case.
- Is too disruptive of business relationships. The hostility engendered by litigation makes it difficult for business people to continue to carry on normal business relationships and activities with each other.

Many of these reasons apply also to most modern-day arbitrations, which have become more and more like court litigation.

Disadvantages of postponing a decision about how to deal with disagreements until after a problem or dispute has arisen.

Deferring consideration of how disputes will be dealt with reduces a party's options. Once a dispute has developed, it is often difficult to get the participants to agree on the time of day, let alone discuss rationally the optimum method for resolving the dispute.

At this point the parties are likely to have different agendas and preferences as to how they would prefer to resolve the dispute. One party may want to emphasize the facts and equities, or sophisticated business realities; the other side may prefer to be in a court of law. One party may want a quick resolution; the other party may prefer delay.

One party may want to avoid publicity; the other party might prefer public exposure of the controversy. Whenever the parties are unable to agree on the method of dispute resolution, the only remaining dispute resolution system, by default, will be litigation.

Advantages of proactively agreeing early on a dispute processing system

Agreeing at the very beginning of a relationship on a method for quick processing and resolution of any future problems or disputes that may arise has many advantages:

- Responsible business managers are accustomed to controlling costs, quality and other aspects of their business relationships. Using private dispute prevention and resolution techniques gives them an opportunity to control disputes as well.
- The beginning of the relationship, when there is an atmosphere of businesslike cooperation, and before any disputes have arisen, is the time when the parties can most rationally discuss the optimum method for dealing with any disputes.
- Including the subject of dispute prevention and resolution as an element in the negotiations leading to the establishment of the relationship helps to define an important aspect of the relationship. For example, if you learn that the other party does not want to agree to have an efficient dispute prevention and resolution system, this knowledge can affect how you negotiate other terms of the agreement – or whether you want to enter into the relationship at all.
- Business people often have a real fear of a foreign legal system. Exhibiting a willingness during the negotiations to set up a rational, fair and prompt dispute resolution system should have special relevance in an international transaction.
- Agreeing early on a method for dealing with potential problems can lead to creative business-oriented results, be a cooperative and satisfying experience, and is likely to help to create and preserve continuing business relationships.
- The special importance of having a dispute prevention “process” already in place is often overlooked. An existing process will absorb the shock of unexpected events and problems. It channels them constructively, so they can be dealt with realistically and ultimately be solved. In the absence of a process, the parties are left to founder without direction, which can lead to confusion and chaos.

- The ready availability of a fair, efficient, trusted and quick method for processing disputes tends to discourage game-playing, posturing, and delaying tactics; may well encourage the parties to cooperate and deal realistically with each other; and may result in the parties resolving the problem by themselves, without having to resort to the dispute resolution procedure at all.

How to overcome resistance to the use of dispute prevention techniques

Despite the acceptance of mediation and arbitration as dispute *resolution* alternatives to litigation in many areas of business, there is still considerable resistance to the techniques for *preventing and controlling* disputes. However, knowledgeable business professionals should recognize and overcome the kinds of obstacles and attitudes that can discourage parties from agreeing in advance on a system for preventing and controlling disputes. Some of these problems are:

Not Wanting to Spoil the Euphoria.

Some people may fear that addressing the subject of dispute resolution during the early stages of a relationship is akin to suggesting to a happy engaged couple that they should enter into a pre-nuptial agreement. However, business should not be an emotional relationship; and ignoring the fact that problems and disputes can routinely occur even between the nicest people is simply a triumph of hope over reality.

Traditional Resistance to Change

Given the newness of dispute prevention, many contract and legal professionals have never before included it as a subject in their negotiation agendas and checklists. Accordingly, there is often a built-in resistance to any new idea. One argument for overcoming this resistance might be that preventing disputes can save money. Another argument might be that much of the impetus for preventing disputes comes from business people, and that contract and legal professionals would be well advised to keep up with their colleagues and clients.

A Perception that Multi-level Dispute Resolution Slows Down the Process

Some people may feel that specifying more than one level of dispute prevention and resolution, such as partnering or a standing neutral or mediation before resorting to arbitration, imposes an unnecessary and delaying process that will retard the ultimate resolution of a dispute.

However, sophisticated business and legal practitioners know that the earlier in the life of a problem or dispute the parties address the problem and deal with it realistically, the more likely they are to resolve it amicably; and that every dispute prevention and resolution system should contain a final and binding “backstop” resolution method of some kind, such as arbitration.

A Perception by One Party That It Will Benefit From an Inefficient Method of Resolving Disputes

A party that thinks that it has – or is seeking – superior bargaining power may think that it will benefit by denying the other party an opportunity to have a dispute resolved promptly and efficiently. For example, a party that is obligated to pay money may, if the other party has no ready recourse, think that it can obtain leverage simply by withholding payment.

Such a strategy ordinarily only works once, because once it is exercised, the other party won't be tricked again. And if such an intended strategy is revealed during contract negotiations, the other party can increase its pricing to offset the risk that it may be deprived of the use of its money for an extended period of time, or it may refuse to enter into the business relationship.

Bottom Line: *In short, there is no rational excuse for a responsible business not to include in its agreements a system for processing disagreements as promptly and efficiently as possible.*



5. A MENU OF PREVENTION, CONTROL AND “REAL TIME” RESOLUTION PROCESSES, AND EXAMPLES OF CONTRACT CLAUSES FOR IMPLEMENTING THOSE PROCESSES*

Business have available to them a wide variety of techniques which can be adapted to prevent and control disputes in virtually any contractual business relationship.

New techniques are being developed every day. Most of the techniques can readily be incorporated into contracts; other techniques can be employed in special situations.

These techniques form a continuum or spectrum that can be classified into four successive (and escalating) stages of dispute resolution:

- **Cooperation and Problem Prevention Stage.** The highest and best form of dispute resolution is prevention of problems and disputes. One of the best ways to prevent disputes is to establish an atmosphere of cooperation.

Establishing clear communications, and techniques for encouraging alignment of interests and teamwork, such as partnering and incentives for cooperation, can create such an atmosphere, improve relationships, prevent some problems, and keep some disputes from arising.

• Dispute Control Stage

Dealing promptly and realistically with problems, differences of opinion and minor disagreements at the time they arise and before they can develop into full-fledged disputes can do much to contain and control disputes. Early negotiation, or obtaining “real time” dispute resolution assistance from a pre-selected standing neutral, can resolve disputes at the source and can even help in preventing the problem from escalating into a dispute.

If the parties are unable to solve problems through the use of Cooperation and Problem Prevention techniques, or Dispute Control techniques, then the process becomes transformed from dispute “prevention” to dispute “resolution.” At this point the parties lose some measure of control over the problem, because they will have to turn to “outsiders” (people who have not been directly involved in the relationship) for assistance in the resolution of the dispute. At this point the levels of hostility, cost, and time for achieving final resolution of the dispute begin to rise significantly.

• Nonbinding Facilitated Resolution Stage

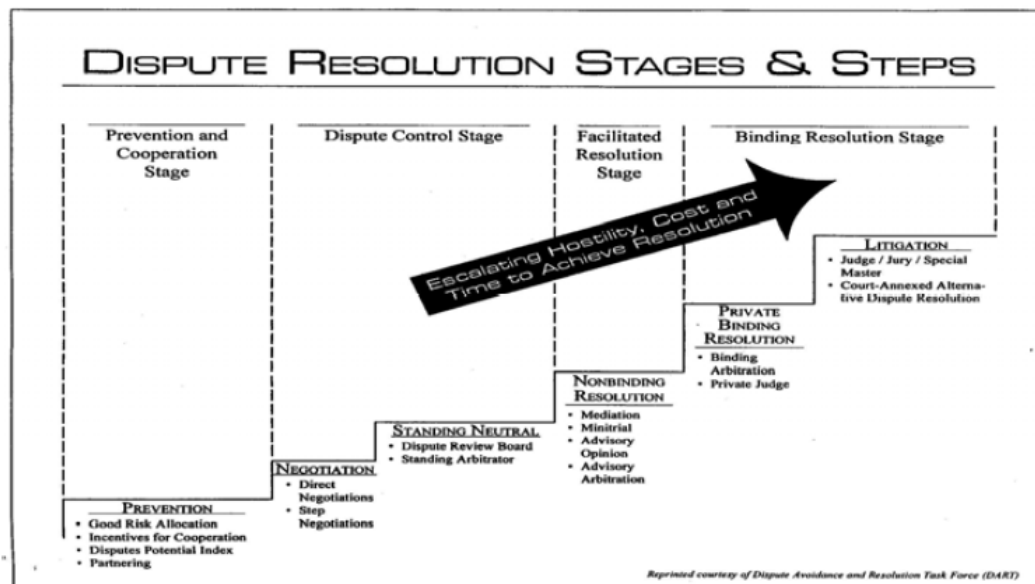
When disagreements develop into real disputes, the parties should use structured, facilitated negotiations, assisted by a skilled negotiator, mediator, fact-finder or evaluator, or some other method of Alternative or Appropriate Dispute Resolution (ADR) to enable them to achieve a mutually-acceptable resolution of most disputes, to avoid having to turn the dispute over to an arbitrator or court for final resolution.

• Binding Resolution Stage

When all other efforts at resolution have failed, it is necessary to have a “back stop” adjudication process in which the dispute will ultimately be resolved by a third party – preferably in an expert, prompt, efficient and private manner – such as arbitration.

These stages can be graphically illustrated by the following “stair step” sequential model developed in the construction industry, which lists techniques in the order in which they would normally be employed in the life of the dispute, beginning first with the techniques that help most in preventing or controlling disputes and offer the greatest potential for saving money and preserving relationships

Dispute Resolution Stages and Steps



From James P. Groton: The "Up Front" Prevention, Control and Early Resolution of Disputes: Dispute Prevention and Management Lessons that Businesses Can Learn from the Construction Industry. A paper to be presented at the Conference "Commercial Contracting for Strategic Advantage – Potentials and Prospects" in Turku, Finland, June 2007, see <http://www.ccc-turku2007.org/program.html>.

In this paper we will deal principally with techniques proactively preventing and controlling disputes, and therefore it will not address in any detail the well-known traditional ADR processes that are involved at the Nonbinding Facilitated Resolution Stage or the Binding Resolution Stage. However, it is prudent to note that any fully crafted dispute prevention and resolution process should recognize that every dispute resolution system must ultimately include a binding dispute resolution process. If the parties do not designate arbitration as their binding method, then, by default, litigation becomes the final and binding dispute resolution method.

None of these techniques is immutable, and they can all be adapted to fit the special needs of any particular transaction. Individual techniques from two or more stages can be combined into multi-level dispute resolution systems.

Specific techniques and illustrative language

The contract planning and negotiation stage is the logical starting point for articulating techniques that have been proactively selected by the parties to prevent, control, reduce and resolve disputes.

The existence in the contract of techniques for handling disputes, and the parties' knowledge that these techniques are readily available, will direct any disputes into channels where they can be dealt with constructively; in many cases their mere availability encourages the parties to act more forthrightly with each other and resolve their disputes without the necessity of using the prescribed techniques.

These proactive techniques are not rigid; they can be adapted to meet the needs of the parties, or the nature of the particular dispute. (It should be noted that the suggestions in this paper regarding use of contract language are not intended and should not be taken as legal advice.)

A. Proactively Promoting Good Cooperation and other Techniques to Prevent Disputes

Realistic Allocation of Risks

One of the most powerful ways to prevent and control disputes between contracting parties is to rationally allocate risks by assigning each potential risk of the business relationship to the party who is best able to manage, control or insure against the particular risk. Conversely, unrealistic shifting of risks to a party who is not equipped to handle the risk can increase costs, sow the seeds of countless potential disputes, create distrust and resentment, and establish adversarial relationships that can interfere with the success of the business enterprise.

Unfortunately, this fundamental principle of good business management and dispute prevention is not widely recognized or understood. In particular, lawyers involved in contract negotiations for their clients who seek zealously to obtain the "best possible deal" by shifting all possible risks to the other party can sometimes create problems of a far greater magnitude than any temporary benefit or satisfaction gained by "winning" the "battle" of the contract negotiations.

Realistic risk allocation promotes efficiency, lowers costs, and creates better relationships. The result in nearly all cases will be fewer disputes and a greater chance for success of the enterprise.

In many cases it will be obvious that certain risks logically should be assigned to a particular party. Other risks can possibly be handled equally well by either party, and some risks may be such that they cannot be effectively handled or even insured against by either party; The assignment of those risks will have to be dealt with through bargaining, and the result of that bargaining will likely be reflected in the economic terms of the deal.

In a one-time short-term transaction between two parties who never expect to do business again with each other, it may not make a difference to anyone but the parties themselves if the party with superior bargaining power shifts risks to the other party that the other party can't control.

However, in any business relationship of long duration or where there are repeated transactions, there are advantages to having a balanced relationship where neither party is exposed to inordinate risk, and where both parties profit. In multiple-party relationships, realistic assignments of risk are particularly important to the maintenance of healthy relationships and control of costs.

In the classic multi-party example of the construction industry, an owner's use of superior bargaining power to shift risks unrealistically to another party typically creates a chain reaction of cost inflation, resentment, downstream risk-shifting, defensive and retaliatory tactics, and misunderstandings caused by different perceptions as to the enforceability of some riskshifting provisions. The result is usually adversarial relationships, disputes and claims, which could have been avoided by intelligent sharing of risks.

Incentives to Encourage Cooperation

Where a business is contracting with a number of different organizations which have diverse interests, and where the cooperation of all of these organizations with each other is important to the success of a transaction or business objective, it is often helpful to structure a system of incentives to encourage such cooperation.

Well-conceived positive incentive programs can be an effective means of aligning the goals of all of the participants, can encourage superior performance, and discourage conflict. Such incentives can take many forms. One example of such an incentive system is the establishment by the leader organization of the enterprise of a bonus pool which, upon attainment of specific goals, will be shared among all of the people with whom the leader organization contracts.

Under such a system the bonus is payable only if all of these participants as a group meet the assigned goals; the bonus is paid either to everyone, or to no one. This device provides a powerful incentive to the participants to work cooperatively with each other, and reduces conflicts which can occur in a common enterprise when every participant might otherwise be motivated solely by its limited perception of its own short-term interests, rather than the success of the enterprise as a whole.

It encourages participants to subordinate their individual interests temporarily to the legitimate needs and success of the enterprise as a whole, for the ultimate benefit of all project participants.

Following is an example of language establishing an incentive plan, taken from a construction contract, where the general contractor, using funds provided by the owner of the project, seeks to encourage cooperative behavior among the subcontractors who are collectively performing the bulk of the on-site construction work:

BONUS POOL PLAN

The General Contractor will establish a Bonus Pool program offering every Subcontractor a cash incentive for achieving the Project Goals outlined below.

The Project Goals are:

- a. The project is completed by the Completion Date;*
- b. There are no unresolved claims by any subcontractor for interference or damage by any other subcontractor or contractor; and*
- c. There have been no accidents which have caused more than ___ work days to be lost.*

If all of the Project Goals are achieved, the General Contractor will pay to each Subcontractor, in addition to each Subcontractor's normal compensation, a bonus of ___% of the Subcontractor's adjusted contract sum.

Partnering

Partnering is a team-building effort in which the parties establish cooperative working relationships through a mutually-developed, extra-contractual strategy of commitment and communication. It can be used for long-term relationships, or on a project-specific basis.

The relationship is based upon trust, dedication to common goals, and understanding of each others' individual expectations and values. The expected benefits from such a relationship include improved efficiencies and cost effectiveness, increased opportunity for innovation, and continual improvement of quality products and services.

When used on a project-specific basis, partnering is usually instituted at the beginning of the relationship by holding a retreat among all personnel involved in the project who have leadership and management responsibilities, in which the participants, assisted by an independent facilitator, become acquainted with each others' objectives and expectations, recognize common aims, develop a teamwork approach, initiate open communications, and establish nonadversarial processes for resolving potential problems.

Partnering can be initiated on an *ad hoc* basis, or by the contract. It is essentially a good faith and non-contractual process. If initiated under the contract, care should be taken to preserve the extra-contractual nature of the process, unless the parties consciously want certain aspects of their partnering relationship to take on the status of contractual obligations.

A typical provision for initiating the voluntary partnering process would be as follows:

VOLUNTARY PARTNERING

The parties intend to encourage the foundation of a cohesive partnering relationship which will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals, to accomplish the objectives of the contract for the mutual benefit of both parties.

This partnering relationship will be bilateral, and participation will be totally voluntary. Any cost associated with effectuating this partnering relationship will be agreed to by both parties and will be shared equally.

To implement this partnering initiative, at the beginning of the relationship representatives of the parties will initiate a partnering development seminar and team-building workshop. These individuals will make arrangements to determine attendees at the workshop, agenda of the workshop, duration, and location, and engage an independent facilitator. Persons required to be in attendance at the workshop will be key personnel from both organizations who are involved in operations under the contract.

Representatives of organizations not parties to the contract may also be invited to attend as necessary or appropriate. Follow-up workshops may be held periodically throughout the duration of the contract as agreed by the parties.

The establishment of a partnering charter will not change the legal relationship of the parties to the contract nor relieve any party of any of the terms of the contract.

Contractual terms that can enhance the partnering relationship

Some people, particularly in the construction industry, believe that the best partnering relationships are founded on an explicit contractual commitment of good faith and reasonable (or fair) dealing.

The laws of many countries impose an implied obligation of good faith and fair dealing in every contract. If the parties want to contractually confirm this kind of relationship, they can include an explicit contractual covenant of good faith and fair dealing, along the following lines:

The parties, with a positive commitment to honesty and integrity, agree to the following mutual duties:

- a. Each will assist in the other's performance;*
- b. Each will avoid hindering the other's performance;*
- c. Each will proceed to fulfill its obligations diligently;*
- d. Each will cooperate in the common endeavor of the contract.*

B. Dispute Control Techniques

Negotiation

Negotiation is the time-honored method by which parties try to resolve disputes through discussions and mutual agreement. Negotiation is not only a free-standing dispute resolution technique, but it also can be a useful adjunct to every other dispute control and resolution technique.

A variant of negotiation is the “step negotiation” procedure, a multi-tiered process that can often be used to break a deadlock. If the individuals from each organization who are involved in the dispute are not able to resolve a problem at their level promptly, their immediate superiors, who are not as closely identified with the problem, are asked to confer and try to resolve the problem; if they fail the problem is then to be passed on to higher management in both organizations.

Because of an intermediate manager’s interest in keeping messy problems from bothering higher management, and in demonstrating to higher management the manager’s ability to solve problems, there is a built-in incentive to resolve disputes before they ever have to go to the highest management level.

Following is a contract clause committing the parties to good faith negotiation:

GOOD FAITH NEGOTIATION

The parties will attempt in good faith to resolve promptly any controversy or claim arising out of or relating to this agreement by negotiation between representatives of the parties who have authority to settle the controversy.

The following paragraphs will implement a step negotiation process:

STEP NEGOTIATIONS

If a controversy or claim should arise, the parties will attempt in good faith to resolve any controversy or claim arising out of or relating to this agreement promptly by step negotiations between managers and executives of the parties who have authority to settle the controversy.

If the controversy or claim cannot be resolved promptly by the representatives of the parties at the operational level, then _____ and _____ (the middle level managers for each party) will meet at least once and will attempt to resolve the matter. Either manager may request the other to meet within seven days, at a mutually agreed time and place.

If the matter has not been resolved within ten days of their first meeting, the managers shall promptly prepare and exchange memoranda stating the issues in dispute and their position, summarizing the negotiations which have taken place and attaching relevant documents, and shall refer the matter to _____ and _____ (senior executives of each party), who shall have authority to settle the dispute. The senior executives will promptly meet for negotiations to

attempt to settle the dispute.

If the matter has not been resolved within ten days from the referral of the dispute to senior executives, either party may refer the dispute to another dispute resolution procedure.

Standing Neutral, Standing Mediator or Standing Arbitrator

One of the most innovative and promising developments in controlling disputes between parties who are involved in any type of long-term relationship (such as a joint venture or construction project) is the concept of the pre-selected or standing neutral to serve the parties as a “real time” dispute resolver throughout the course of the relationship.

This neutral, or a board of three neutrals (designated variously as a “standing neutral,” “mutual friend,” “referee,” “dispute resolver,” or “dispute review board”) is selected mutually by the parties early in the relationship; is briefed on the nature of the relationship; is furnished with the basic documents describing the relationship; routinely receives periodic progress reports as the relationship progresses; and is occasionally invited to meet with the parties simply to get a feel for the dynamics and progress of the relationship.

The standing neutral is expected to be available on relatively short notice to make an expert recommendation to the parties to assist them in resolving any disputes that the parties are not able to resolve themselves.

It is important to the effective working of this process that the parties be mutually involved in the selection of the neutral, and that they have confidence in the integrity and expertise of the neutral.

Typically the neutral’s role, if called in to help resolve a dispute, is to render an impartial nonbinding recommendation concerning the subject matter of the dispute. In some instances the role of the neutral is changed to be simply a standing mediator to act as an informed facilitator in negotiations between the parties.

Although the standing neutral’s decisions are typically not binding, experience has shown that neutrals’ recommendation have generally been accepted by both parties, without any attempt to seek relief from any other tribunal.

This result is enhanced where there is a contract requirement that in the event of any subsequent arbitration or litigation, the recommendation of the standing neutral will be admissible in evidence. Three critical elements are essential to the success of the standing neutral technique:

1. Early mutual selection and confidence in the neutral.
2. Continuous involvement by the neutral.
3. Prompt action on any submitted disputes.

The existence of a pre-selected neutral, already familiar with the business relationship between the parties and its progress, avoids many of the initial problems and delays that are involved in selecting and appointing neutrals after a controversy has arisen.

The ready availability of the neutral, the speed with which he or she can render recommendations, and particularly the fact that this neutral will hear every dispute which occurs during the history of the relationship, all provide powerful incentives to the parties to deal with each other and the neutral in a timely and frank manner, by discouraging game-playing, dilatory tactics, and the taking of extreme and insupportable positions.

In practice, the nature of this process is such that the mere existence of the neutral always results in minimizing – and often totally eliminating – the number of disputes that have to be presented to the neutral. Even though some expense is involved in the process of selecting, appointing, initially orienting, and periodically reporting to the neutral, the costs are relatively minimal, even when the neutral is called on to resolve disputes.

The standing neutral concept was first used in the construction industry, which has developed standard detailed specifications for the establishment and operation of such a process, using either a group of three neutrals called variously a “Dispute Review Board” or a “Dispute Resolution Board,” or a single “Dispute Resolver.”

This process is readily transferable to other industries. Parties who wish to set up a standing neutral process can refer to such sources as the International Chamber of Commerce (for ICC Dispute Resolution Rules and clauses, *see* www.iccwbo.org/court/dispute_boards/id4424/index.html; for ICC Dispute Board Rules on Dispute Review Boards (DRBs); Dispute Adjudication Boards (DABs); and Combined Dispute Boards (CDBs), *see* www.iccwbo.org/court/dispute_boards/id4352/index.html), the Dispute Resolution Board Foundation (www.drb.org), the American Arbitration Association (www.adr.org), or the standard documents of the Federation Internationale Des Ingenieurs Conseils (FIDIC) (www.fidic.org), and adapt the language to the specifics of the particular business relationship or transaction.

In the construction industry the recommendations of a standing neutral are typically merely advisory. However, in certain business contexts the parties may wish to treat the standing neutral’s recommendations as binding decisions.

In this case the standing neutral becomes a standing arbitrator, and the operative contract language, in addition to providing for the continuing nature of the standing neutral’s assignment, should also contain appropriate language that makes the decisions binding under the applicable arbitration statute, and reference the arbitration rules of an established arbitration agency.

Following are typical clauses that parties can use to establish a standing neutral process which can be adapted, as appropriate, to cover the many available roles that a standing neutral can perform.

AGREEMENT FOR STANDING NEUTRAL

The parties will, either in their contract or immediately after entering into their contractual relationship, designate a Standing Neutral who will be available to the parties to assist and recommend to the parties the resolution of any disagreements or dispute which may arise between the parties during the course of the relationship.

Appointment. *The neutral will be selected mutually by the parties. The neutral should be experienced with the kind of business involved in the parties' relationship, and should have no conflicts of interest with either of the parties.*

Briefing of the Neutral. *The parties will initially brief the neutral about the nature, scope and purposes of their business relationship and equip the neutral with copies of basic contract documents. In order to keep the neutral posted on the progress of the business relationship, the parties will furnish the neutral periodically with routine management reports, and may occasionally invite the neutral to meet with the parties, with the frequency of meetings dependent on the nature and progress of the business venture.*

Dispute resolution. *Any disputes arising between the parties should preferably be resolved by the parties themselves, but if the parties cannot resolve a dispute they will promptly submit it to the neutral for resolution.*

Conduct of hearing and recommendation. *As soon as a dispute has been submitted to the neutral, the neutral will set an early date for a hearing at which each party will be given an opportunity to present evidence. The proceedings should be informal, although the parties can keep a formal record if desired. The parties may have representatives at the hearing.*

The neutral may ask questions of the parties and witnesses, but should not during the hearing express any opinion concerning the merits of any facet of the matter under consideration. After the hearing the neutral will deliberate and promptly issue a written reasoned recommendation on the dispute.

Acceptance or rejection of recommendation. *Within two weeks of receiving the recommendation, each party will respond by either accepting or rejecting the neutral's recommendation. Failure to respond means that the party accepts the recommendation.*

If the dispute remains unresolved, either party may appeal back to the neutral, or resort to other methods of settlement, including arbitration (if agreed upon by the parties as their binding method of dispute resolution) or litigation. If a party resorts to arbitration or litigation, all records submitted to the neutral and the written recommendation will be admissible as evidence in the proceeding.

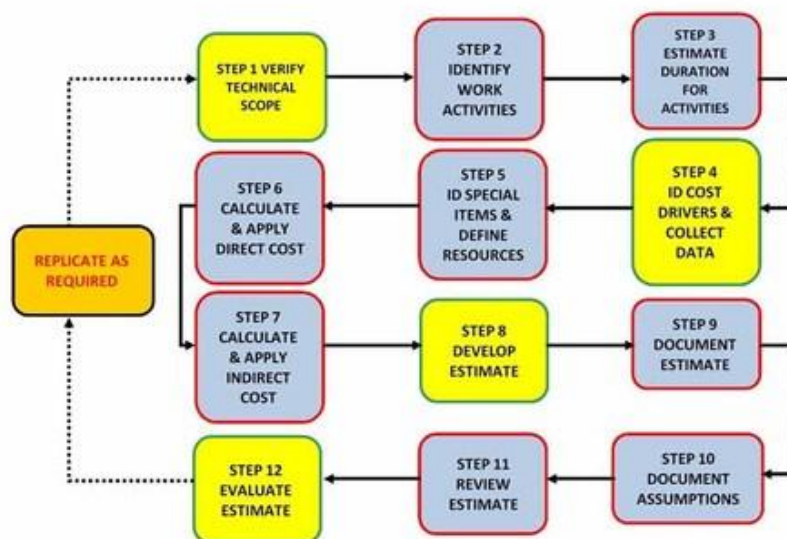
Fees and expenses. *The neutral shall be compensated at his or her customary hourly rate of compensation, and the neutral's compensation and other reasonable costs shall be shared equally by the parties.*

Succession. *If the neutral becomes unable to serve, or if the parties mutually agree to terminate the services of the neutral, then the parties will choose a successor Standing Neutral.*

* * *

[The language above outlines the most basic kind of Standing Neutral arrangement. If the parties have any special wishes concerning the Standing Neutral's role, or any special procedures that they wish to follow regarding referral of disagreements or disputes to the neutral, they can include them at this point in the agreement. If the parties wish to incorporate and adapt a standard set of procedures into the agreement, they can insert the following language, which refers to a standard set of American Arbitration Association Guide Specifications for construction projects (which are available at www.adr.org/sp.asp?id=28761):

Reference Procedures. *The procedures for resolution of disputes by the neutral shall in general follow those established by the Dispute Resolution Board Guide Specifications of the American Arbitration Association, dated Dec. 1, 2000, using Section 1.02D, the Alternative Procedure for Selection of a Single-Member Board, substituting "the Standing Neutral" in every place where there is a reference to the Board; treating every reference to "the Contract" as a reference to "the contract relationship between the parties;" and, in every case where there is a reference to such matters as "construction activity," "job site," "plans, specifications, drawings, contract documents" or other terms peculiar to the construction industry, applying those procedures to activities under the contract relationship between the parties.*



6. CPR CONSTRUCTION PREVENTION MONOGRAPHS

CPR has recently published three Dispute Prevention Monographs, written by members of CPR's Construction Advisory Committee, on the subjects of three of the most useful dispute prevention techniques developed by the construction industry.

The titles of these Monographs are:

Realistic Risk Allocation: Allocating Each Risk to the Party Best Able to Handle the Risk

Partnering: Aligning Interests, Collaboration, and Achieving Common Goals

Dispute Review Boards and other Standing Neutrals: Achieving "Real Time" Resolution and Prevention of Disputes

Each monograph, in addition to describing exactly how the particular technique has been successfully used to prevent construction disputes, also identifies ways in which the technique can usefully be adapted to prevent disputes in other industries and business relationships.

Practitioners who wish to know more about the origins, development and nuances of these three important techniques for dispute prevention, control and early resolution will find these monographs to be a rich source of information.

7. BACKGROUND PAPERS, RESEARCH STUDIES AND EXPLORATORY MATERIALS

As a by-product of the CPR Prevention Exploratory Group's research work, the group generated and identified a number of background papers, research studies and exploratory materials, most of which are still works in progress. These materials could well benefit from the comments and ideas of researchers and scholars in the field, so CPR has determined that they should be made available for examination and revision.

Following is a partial list of such materials, copies of which may be obtained or accessed by interested individuals by contacting the CPR Library.

An overview of the present state of the art and practice of anticipation and prevention of disputes around the world.

A Webliography of prevention materials (authored by Helena Haapio of the ProActive ThinkTank)

Language and expressions describing the practice of anticipation and prevention.

A preliminary inventory of various sources and subjects of business disputes.

Thoughts on recent evolutionary changes in the disputes field, and the resistance that some of these changes have experienced.

Thinking Ahead: Moving from Reactive Dispute Resolution to Proactive Dispute Anticipation and Prevention (the Report of the CPR Conflict Prevention Exploratory Committee).

The economic case for preventing and controlling disputes.

Methods of implementing, training, evaluating, and measuring prevention practices.

Implementation materials such as: (1) The natural constituency for dispute prevention: business leaders, managers, and their inside counsel. (2) The economic case for preventing and controlling disputes. (3) Methods of implementing, training, evaluating, and measuring prevention practices.

Study project: The problem of "internal integration" of participants who may be confronted with special emergencies such as aviation emergencies and healthcare emergencies: The need for anticipating and dealing with such emergencies and the importance of special advance training

Research inquiry: Why are business leaders so willing to fund dispute resolution efforts but reluctant to fund dispute prevention efforts? Is it because dispute resolution is tangible, something they can feel and touch, while dispute prevention, whose objective is to create "non-events," is intangible, less real?

Research inquiry: To what extent have there been studies about the behavior of parties to a business relationship when they are confronted with an unexpected event, emergency, or problem?

Alternatives to the High Costs of Litigation, September, 2001

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SECTION: ADR SYSTEMS DESIGN; Vol. 19, No. 8; Pg. 191

LENGTH: 1846 words

TITLE: Partnering, With a 'Ladder,' Sustains Government Contracting

NAME: By Frank Carr

BIO: Frank Carr is the chief trial attorney and dispute resolution specialist for the U.S. Army Corps of Engineers in Washington, D.C. He also is active in designing conflict management systems, serving as a neutral party, and facilitating partnering workshops.

This section of this article on the Issue Resolution Ladder is taken substantially from the author's book, "Partnering in Construction: A Practical Guide to Project Success," published by the ABA Forum on the Construction Industry (1999). Examples of an Issue Resolution Ladder and an ADR action plan are contained in the book.

TEXT:

In contracting with the federal government, conflict management is essential to achieving contract expectations and sustaining strategic business relationships. But successful conflict management does not just happen. For effective and efficient conflict management, organizations need to develop plans to control conflict from the beginning of contract performance to contract completion.

Conflict management planning should consider dispute prevention as well as means for dispute resolution. This will empower contracting officers, project and program managers, contractors, and other stakeholders to establish an environment where disruptive issues are easily raised and conflicts quickly resolved. Developing specific plans for identifying problems and avoiding litigation is necessary for creating such an environment.

Currently, for many organizations, whether public or private, conflict management planning is not a routine business practice. Too often, organizations believe conflict is the natural result of the risks involved in contracting and the competitive nature of business. For these organizations, unrestrained conflict is the norm and adversarial relationships are encouraged. As a consequence of this mindset, contract disputes and workplace problems remain unresolved and parties eventually become entangled in protracted litigation.

In federal government contracting as well as in private industry, the costs of adversarial relationships are staggering for organizations and the frustrations for individuals in these organizations are overwhelming.

Government agencies and contractors are finding that conflict frequently resulting in litigation is expensive, time-consuming, and unproductive. Additionally, business relationships deteriorate as communications among contracting parties are stifled and trust is destroyed. For individuals, the workplace is often hostile and encounters are frequently confrontational, causing even more conflicts.

Adversarial relationships in the contracting community must change. Although risk and competition are inevitable, conflict is not. The way to change this litigation mindset is through the use of creative and innovative conflict management planning. This change, however, is not always easy to accomplish. It requires a significant paradigm shift for many organizations and individuals.

Today, the most successful dispute prevention and resolution plans are established with the underlying assumption that conflict is a management problem, rather than a legal issue.

THE CONCEPTS: PARTNERING AND ADR

To assist organizations in establishing a conflict management plan, two concepts are available: (1) partnering and (2) alternative dispute resolution. Partnering focuses on conflict avoidance while ADR concentrates on conflict resolution. Used together, these concepts can establish an effective and efficient conflict management program.

Partnering is a process designed to change cultures in organizations and attitudes in individuals by promoting an environment for risk-sharing, teamwork, and attaining common goals. It is a continuing process of aligning organizations and individuals to achieve a mutual vision, reap economic benefits, and prevent litigation.

The partnering process starts early in the business relationship and brings all stakeholders together at a facilitated workshop to chart their future. At the workshop, stakeholders discuss the importance of trust and respect, identify shared interests, develop methods to improve communications, and learn how to sustain their relationship. As a result of this process a conflict management plan, including an ADR option, often is initiated.

ADR provides organizations with a continuum of available techniques to use for resolving disputes when negotiations are unsuccessful because the parties are at an impasse. These ADR techniques, such as facilitated or evaluative mediation, provide neutral third-party assistance in the procedural and substantive aspects of conflict resolution depending upon the nature of the impasse.

An organization that includes ADR in its conflict management plan recognizes that even in the best business relationships conflict can occur but an alternative to litigation exists.

AN ISSUE RESOLUTION LADDER

The time is ripe for federal government agencies and the business community to adopt conflict management planning as a best business practice. Conflict is resolved more quickly and with less friction when contracting organizations have a mutually developed management plan to follow as issues arise.

The ideal place for organizations to begin conflict management planning is at a partnering workshop. Here, the parties can take the time early in their relationship to focus on dispute avoidance and problem solving prior to the development of any conflict among them. Further, the parties can build a decision-making procedure at that time to accomplish it. An excellent example of a conflict management plan developed at a partnering workshop is the Issue Resolution Ladder.

The Issue Resolution Ladder is premised on the theory that unresolved issues are likely to result in disputes and, as such, all issues should be resolved expeditiously by the parties to avoid conflict. Also, it provides a procedural framework of escalating steps for the parties to follow for early issue resolution-hence the name Issue Resolution Ladder.

At the partnering workshop, the facilitator assigns the task of building the Issue Resolution Ladder directly to the individuals who are present representing their organizations. These individuals may represent the government, the contractor, the design firm, the user, and the major subcontractors.

They are expected to mutually develop a structure for issue resolution. In most contracts, especially small construction projects, there is one Issue Resolution Ladder. In more complex contracts or construction projects, there may be several Issue Resolution Ladders; each designed for a distinct potential problem area.

The structure of the Issue Resolution Ladder relies on identifying responsible individuals across organizational boundaries to act on issues, and then setting clear time limits for the actions.

The typical Issue Resolution Ladder identifies responsible individuals at each level within the partnering organizations, who are expected to work together on resolving issues. When an issue cannot be resolved at the lowest organizational level, the issue is elevated to the next level for consideration. Ignoring an issue at any level is not acceptable.

Identifying responsible individuals who are expected to work on an issue makes them accountable. Further, when an issue is unresolved at one level, most Issue Resolution Ladders specify a set time period for escalating the issue to the next level. Usually, the time is expressed in days or weeks. This limit prevents issues from remaining unresolved at any level.

A ground rule for Issue Resolution Ladders is that there will be no jumping of levels or "steps" by the parties. The responsible individuals at each level are expected to follow the steps.

This encourages issue resolution at the lowest level, while at the same time making it acceptable to escalate unresolved issues.

The Issue Resolution Ladder serves several important purposes. First, it clarifies individual roles and responsibilities for making decisions. Second, it provides a specific time period within which individuals can continue to consider a decision. Finally, it establishes a plan for conflict management that provides a nonadversarial environment for raising issues and expediting decision-making.

ACTION PLAN

Although the Issue Resolution Ladder should facilitate the resolution of most issues, some issues may not be resolved. Left unresolved, these issues can lead to disputes resulting in litigation. This result, however, does not have to happen. The parties can decide to create an ADR action plan to address disputes that are not resolved on the Issue Resolution Ladder.

An ADR action plan is an agreement among the parties for the intervention of a neutral third party to assist them in dispute resolution. In the design of an ADR action plan, the parties can focus on the need for early resolution to avoid litigation, the technique or techniques available for use when a dispute occurs, the selection of the neutral party, and the steps required to initiate the process.

The ADR action plan will usually provide for a nonbinding ADR process unless the federal agency has met the requirements of the Administrative Dispute Resolution Act of 1996 prior to using a binding process such as arbitration.

A simple ADR action plan may provide for a specific form of ADR intervention. If mediation is the agreed process, the details of the ADR action plan could include the early selection of a mediator or mediators, the establishment of procedures for referring disputes to mediation, the role of the mediator (facilitative or evaluative), and the payment of costs associated with the mediation.

In a complex contract or a major construction project, the parties could decide to use a more structured form of ADR such as a disputes review board, a minitrial, or an arbitration proceeding. The parties also could use a combination of ADR processes. Two-step ADR procedures, however, are rare in Federal government contracting.

At the partnering workshop, time may not permit the development of an ADR action plan. When this happens, the parties normally ask a subgroup to develop the plan and present it to the partnering organizations at a follow-up partnering meeting. Often the parties will use a facilitator familiar with ADR systems design to assist them in drafting the ADR action plan.

The advantages of an established ADR action plan to the dispute resolution process are that the neutral party has time to learn the interests of the organizations, understand the personalities of the individuals, and to build trust among both.

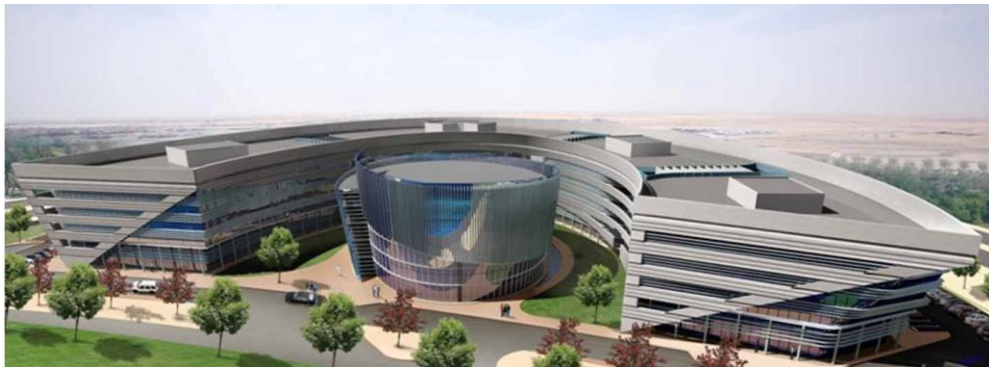
ACHIEVING EXPECTATIONS, SUSTAINING RELATIONSHIPS

All organizations involved in Federal government contracting want to achieve their contract expectations and sustain strategic relationships. Successful organizations recognize the importance of conflict management planning to reach these goals.

Today, tools are available to assist in building a conflict management plan. When organizations take the time early in their relationship, such as at a partnering workshop, to develop an Issue Resolution Ladder and an ADR action plan, most problems can be avoided and any disputes resolved quickly.

An Issue Resolution Ladder and an ADR action plan provide a structure with acceptable procedures to follow in managing conflict. They should help any organization to improve trust, enhance communications, reduce or eliminate litigation, and, most important, achieve contract expectations and sustain strategic business relationships. This is an efficient and effective conflict management program.

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Do contracting parties have a duty to act in good faith under English law?

The reluctance of the courts to imply terms into agreements negotiated between two commercial parties at arm's length is well known and is based on the long-established *doctrine of freedom of contract*.

That said, the courts are on occasion prepared to imply terms into contracts in circumstances where the concluded contract is not clear. In such cases, the courts will consider what the contract would reasonably be understood to mean as a whole against the relevant contractual background, and in light of the knowledge that was reasonably available to the parties at the time the contract was entered into.

Since February 2013, two High Court judgments and one Court of Appeal judgment have been handed down that examine the role of good faith in English law and the extent to which circumstances under which the English courts might recognise an overarching duty of good faith. *All these cases took as their starting point the fact that there is no legal principle of good faith under English contract law.*

This twenty-fifth issue of Insight considers the recent approach of the courts to good faith and the implications for commercial practice.

What is good faith?

The concept of good faith is subjective and depends very much on the overall terms of the contract and the commercial context, but good faith essentially means being honest and “playing fair”.

A deliberate failure to share information that is objectively relevant to the performance of the contract, for example, would undoubtedly amount to a breach of good faith in the case of a long-term contract such as a joint venture which requires the parties to work together.

Good faith would not automatically apply to clauses that involve an element of discretion, but it may apply to clauses that involve an assessment or choice as to a range of options to which the interests of both parties are relevant.

Recent case law

Yam Seng – February 2013

In *Yam Seng Pte Ltd v International Trade Corporation Ltd* [2013] EWHC 111 (QB), the parties entered into a contract under the terms of which ITC granted Yam Seng an exclusive agreement in respect of the distribution of fragrances bearing the name “Manchester United”. The relationship between the parties broke down and proceedings were brought by Yam Seng for breach of contract and misrepresentation.

Yam Seng asserted that it was an implied term of the contract that the parties would deal with each other in good faith.

Specifically, Yam Seng argued that ITC had (i) failed to act with an implied obligation of good faith by prejudicing Yam Seng’s sales by offering the same products for domestic sale below the duty free prices that Yam Seng was permitted to offer; (ii) instructed or encouraged Yam Seng to incur marketing expenses for products that ITC was unable or unwilling to supply; and (iii) offered false information upon which Yam Seng relied to its detriment.

There were no express terms of the contract covering any of these points. On the facts, only two obligations were implied. Firstly, the court found there was an obligation not to undercut duty free prices, and secondly, there was an obligation not to knowingly provide false information, and a duty of good faith was implied in both these respects. The first obligation was contrary to usual standards of commercial dealing and the second was implied into the agreement between the parties as a matter of fact.

The judge, Leggatt J, had various reasons why he saw fit to imply these two terms. In the main, it was necessary for terms to be implied because the contract was skeletal in form, it had not been professionally drafted and it did not take into account an important industry assumption that duty free prices would be lower than domestic retail prices, which was common ground between the parties at trial.

Leggatt J also commented obiter that the contract was a long-term distributorship agreement which required the parties to communicate effectively and cooperate with each other in its performance. Accordingly, there would probably have been an implied obligation upon ITC to keep Yam Seng informed of ITC’s best estimate of when products would be available for sale and to inform Yam Seng of any material change in this information without Yam Seng having to ask.

Compass - March 2013

In Compass Group UK and Ireland Ltd v Mid Essex Hospital Services NHS Trust [2013] EWCA Civ 200, the parties entered into a long-term facilities contract under the terms of which Compass agreed to provide catering services to the Trust.

The contract contained a duty to cooperate in good faith at clause 3.5, which provided:

“The Trust and the Contractor will cooperate with each other in good faith and will take all reasonable action as is necessary for the efficient transmission of information and instructions and to enable the Trust or, as the case may be, any Beneficiary to derive the full benefit of the Contract.”

Accordingly, the Court of Appeal overturned the decision of the first instance court in finding that commercial common sense did not favour the addition of an overarching duty to cooperate in good faith in circumstances where good faith had been provided for in the contract in such a precise manner at clause 3.5.

The Trust was not therefore prevented from awarding service failure points for failures in performance as the contract expressly contained precise rules for these matters. Further, it did not matter that the Trust deducted £84,540 for a one-day out-of-date chocolate mousse.

The ability of the Trust to award service failure points for poor performance was an absolute contractual right.

The Court of Appeal emphasised that if the parties had wished to impose an overarching duty of good faith, they should have done so expressly.

TSG - May 2013

TSG Building Services plc v South Anglia Housing Ltd [2013] EWHC 1151 (TCC) is probably the most important of the three cases to the construction industry because it concerns the implication of terms into an ACA Standard Form of Contract for Term Partnering (TPC 2005, amended 2008).

TSG contracted with SAH to provide gas servicing and an associated works programme in respect of SAH's housing stock. Clause 1.1 of the contract provided:

“The Partnering Team members shall work together and individually in the spirit of trust, fairness and mutual cooperation for the benefit of the Term Programme...”

SAH terminated the contract and TSG argued that termination was wrongful and in breach of clause 1.1. The issue the court had to decide was whether the good faith clause was pervasive such that it applied to the whole contract.

On the facts, there was no suggestion in the clause that the obligation to act in good faith extended to all aspects of the contract. Indeed, it would not be appropriate for a duty of good faith to apply to each and every obligation within the contract. If this was the case, the good

faith clause would potentially have the effect of undermining other clauses in the contract that conferred rights on the parties, contrary to the parties' intention.

The court did however accept that, in principle, an express obligation to act in good faith could be pervasive and, depending on the nature and drafting of the clause, it may be possible for it to affect all aspects of the contract.

However, this was not the case here as the contract contained an unqualified right to terminate the contract for convenience at sub-clause 13.3 to which the obligation to act in good faith could not possibly extend. SAH had an absolute entitlement to terminate the contract for any or no reason.

The judge, Akenhead J, emphasised that the termination for convenience clause did not contain an element of responsibility. The entitlement to terminate the contract was absolute and it was obvious to each party that they were entitled to terminate at any time. The court also followed the Court of Appeal in *Compass* in refusing to find that there was an implied duty of good faith.

Everything turned on the drafting of the good faith clause. If the good faith clause had involved an element of discretion, it would have been much easier for the court to conclude that good faith should apply to the exercise of that discretion.

But that was not the case here. So what does this all mean in practice?

Should you include an express obligation to act in good faith in your contract?

The answer is probably that the existence of an obligation to act in good faith does not necessarily guarantee that the parties will act in good faith. *This is because contracts cannot be expected to provide for every eventuality or be shaped to suit the peculiarities of every commercial relationship.*

The key to a successful contract is a reasonable attitude, both in the interpretation of any contract provisions that might be unclear, and also in the approach taken by the parties to any other differences of opinion which, if dealt with reasonably and courteously, should not lead to the development of a formal dispute.

Some may argue that the inclusion of an express provision to act in good faith might imply a lack of trust between the parties, which may have the effect of setting the commercial relationship off on completely the wrong footing.

However, this is probably more of a concern than a reality. There are already contracts founded on the concept of good faith, for example the NEC form which obliges the parties to act in a "spirit of mutual trust and co-operation".

The key question is whether or not there is an overarching duty of good faith? This is something the courts have yet to find, although parties should bear in mind that the existence of an express good faith clause may provide a standard against which their own actions may be measured.

Placing the theory aside, if you think it would be advantageous to include an express obligation to act in good faith in your contract, you should ensure that it is drafted carefully so that the extent of the obligation, particularly in relation to the rest of the contract, is clear.

Conclusion

We are not yet at the stage where the English courts are ready to imply upon contracting parties a duty to act in good faith, as is the case in most civil codes.

But this is not unexpected as the current approach of the courts is consistent with the general principle of English contract law that a term will not be implied into a contract if it would be inconsistent with an express term of the contract.

Instead, the courts prefer to consider what the contract would reasonably be understood to mean as a whole against the relevant contractual background, and in light of the knowledge that was reasonably available to the parties at the time the contract was entered into.

If parties wish to impose a contractual duty of faith they should do so expressly and in very clear terms.



Making a Claim under the FIDIC Form of Contract

Clause 20.1 of the FIDIC form provides a procedure for dealing with the notification of and substantiation of extension of time and additional payment claims, and sets out the mechanics of the decision-making process of the engineer in respect of those claims. Notice is initially required from the contractor "describing the event or circumstances giving rise to the claim".

The important time bar provision is that the notice must be given "as soon as practicable" and then more particularly "not later than 28 days after the Contractor became aware, or should have become aware" of the particular event or circumstance. It is then the second paragraph that sets out the time bar provision. If the contractor fails to give notice within the 28-day period the Time for Completion "shall" not be extended, and no additional payment shall be made.

However, that is not the end of the matter. Clause 20.1 requires the contractor to submit other notices if and as appropriate under the contract, in accordance with the other provisions within the contract. Further, the contractor is to keep "contemporary records" in order to substantiate the claim. The engineer may also require further record keeping or the keeping of further contemporary records.

There are then some sensible deadlines placed upon the contractor to provide substantiation of the claim, and also again sensible timescales required within which the engineer is to consider and approve or disapprove the claim. The reasonably tight timescale within which substantiation is made and the engineer either accepts or rejects the claim must be welcomed in the modern context of considering delay and additional costs during the course of a project.

Problems need not fester until the end of a project. A dispute can crystallise during the course of the project and then be dealt with by the Dispute Adjudication Board, assuming that the contractor or employer refers the matter to the Board. However, the fact remains that FIDIC anticipates and provides for either party to progress matters to a conclusion during the course of a project rather than wait until the conclusion of the project.

Finally, the final ninth paragraph of clause 20.1 provides that any extension of time or additional payment "shall" take account of any failure, prevention or prejudice caused by the contractor to the investigation of the claim. That proviso only applies where the time bar provision in the second paragraph has not excluded the claim entirely.

Contemporary records

The contractor must keep contemporary records in order to substantiate its claim. The requirement for contemporary records in the FIDIC Contracts has been considered by Acting Judge Sanders in the case of *Attorney General for the Falklands Islands v Gordon Forbes Construction (Falklands) Limited* (2003) 6 BLR 280. Judge Sanders considered that contemporary records were:

"original or primary documents, or copies thereof, produced or prepared at or about the time giving rise to a claim, whether by or for the contractor or the employer."

The important point then about contemporary records is that they arise at the time of the claim. The emphasis is very much upon the instantaneous keeping of records which document the events and circumstances at the time of, or certainly very close to the time of, the claim.

Judge Sanders held that it was not possible to avoid the contractual requirement of contemporary records by simply producing witness statements at some point after the event. Those witness statements may of course record the recollections of those who were involved at the time, but they are no substitute for the proper keeping of contemporary records at the time of the claim.

Detailed claim submission

The contractor is then required to submit a "fully detailed claim", together with all supporting documentation, in respect of the time or additional payment claim. Sub-paragraph (b) to the fifth paragraph of clause 20.1 expressly requires the contractor to submit these fully detailed claims at monthly intervals. As the contractor is required to give notice not later than 28 days after the "event or circumstance", then it is arguable that, if the event or circumstance continues, the contractor will need to continue to submit notices each month.

This is a somewhat unusual requirement in a construction standard form, but one that may have far-reaching ramifications, especially if the contractor submits some notices but not others. In addition, the contractor may need to provide such further particulars "as the Engineer may *reasonably* require".

Once the delaying and financial effect arising from the event or circumstance has come to an end, then the contractor must within 28 days provide a final claim. Once again, the engineer may require further reasonable particulars.

The interim and final claims are to be considered by the engineer. The engineer has 42 days after receipt of the claim, or the further particulars requested, to respond. This period may be extended, but only with the approval of the contractor. The obligation on the engineer is to respond because of the use of the word "shall". The engineer may approve the claim, or if disapproving the claim must then provide detailed comments. If the engineer considers that further information is required, the engineer still has an obligation to respond in respect of the principles of the claim within the 42-day (or other agreed) period.

This approach is supported by clause 1.3, which requires the engineer not to unreasonably delay the determination of claims.

The "take account of" provision

The final ninth paragraph of clause 20.1 expressly provides that a failure to comply with clause 20.1 "shall" be taken into account in respect of any claim made by the contractor. If a failure of the contractor means that a "proper investigation" of the claim has been prevented or prejudiced, then any extension of time or additional payment shall take account of the extent of that failure. This is unless the claim has already been barred as a result of the operation of the second paragraph of clause 20.1.

The time bar provision encourages the contractor to put the engineer on notice of delays or requests for additional payments. This further provision, at paragraph 9 of clause 20.1, encourages the contractor to promptly provide a detailed claim, together with supporting documentation, rather than simply serve notices and then work out the detail of its claim at some later date. The emphasis therefore of clause 20.1 is very much to raise claims during the course of the contract, and also, importantly, to work out the detail of those claims, evaluate them, and certify them (or reject them) during the currency of the contract.

The requirement of the contractor to provide a detailed claim within a 42-day period is not expressed as a condition precedent, unlike the initial notice identifying the event or circumstance or as a footnote. Arguably, if the contractor submits, in good time, notices of events or circumstances giving rise to additional time or money but then fails to provide claims, or properly detailed claims and substantiation in accordance with paragraph 5 of clause 20.1, then paragraph 9 of clause 20.1 allows those effects to be taken into account.

For example, if a delay occurs that would have been avoidable, the contractor may still not receive an extension of time. If the employer has lost the opportunity to take some avoiding action that could properly have been instigated, then that may also be taken into account either in the award of an extension of time or in the calculation of additional money.

Notice provisions as a condition precedent

The time bar provisions in the second paragraph of clause 20.1 are intended to be a condition precedent to the contractor's claim for an extension of time and additional money. Some commentators regard the FIDIC provision as one that will exclude the employer's liability to the contractor if the contractor first provides the notice within time. Such provisions can be effective under English law.

However, the English courts have taken the view that timescales in construction contracts are not mandatory, but directory.

This is unless the contract clearly states that the party will lose its right, and sets out a specific timescale within which the notice must be served. In other words, it must be possible to identify precisely the trigger point for the notice period and then secondly for the clause to have clearly set out the right that has been lost once the time period has expired.

Awareness

Under clause 20.1, the contractor needs to have "*become aware . . . or should have become aware*" in order to notify the engineer. There will no doubt be arguments about when a contractor became aware or should have become aware of a particular event, and also the extent of the knowledge in respect of any particular event. Ground conditions offer a good example, see sub-clause 4.12. Initially, when a contractor encounters ground conditions that are problematic, he may continue to work in the hope that he will overcome the difficulties without any delay or additional costs.

As the work progresses, the contractor's experience of dealing with the actual ground conditions may change, such that the contractor reaches a point where he should notify the project manager. The question arises: should the contractor have notified the project manager at the date of the initial discovery, rather than at the date when the contractor believed that the ground conditions were unsuitable?

The answer must be, in line with the words of FIDIC, that the contractor should give notice when he encounters ground conditions that an experienced contractor would have considered at the Base Date to have had only a minimal chance of occurring and so it would have been unreasonable to have allowed for them in the contract price, having regard to all of the information that the contractor is to have taken into account under the contract.

The move towards time-bar provisions

Standard construction contract forms have not traditionally included time-bar provisions. Many standard forms required a notice to be given within a specified period. The pre-1999 FIDIC forms did not include a time bar. The old JCT formulation required a notice to be given within a "reasonable time."

Mr Justice Jackson in the case of *Multiplex Constructions (UK) Ltd v Honeywell Control Systems Ltd (No. 2)*. 2007] EWHC 447 (TCC), [2007] BLR 195 concluded that contractual terms requiring a contractor to give prompt notice of delay serve a useful purpose:

"such notice enables matters to be investigated while they are still current. Furthermore, such notice sometimes gives the employer the opportunity to withdraw instructions when the financial consequences become apparent. If Gaymark is good law, then a contractor could disregard with impunity any provision making proper notice a condition precedent. At his option the contractor could set time at large."

Equity

The contractor wishing to make a claim for additional time or additional payment, like under a more traditional standard form, may be able to rely upon the equitable principles of waiver and/or estoppel. It may be that the contractor does not serve a formal notice because, by words or conduct, the employer (or indeed engineer) represents that they will not rely upon the strict eight-week notice period.

The contractor would also need to show that he relied upon that representation and that it would now be inequitable to allow the employer to act inconsistently with it. Further, what might be the position if the contract contained a partnering-styled amendment such as the requirement for the parties to act "***in a spirit of mutual trust and co-operation***"? It would be somewhat ironic if a contractor did not submit contractual notices, in the spirit of "mutual trust and co-operation", but the employer at some much later date relied on the strict terms of clause 20.1.

Conclusion

The time-bar provisions in clause 20.1 of FIDIC 1999 are valid under English law. However, the success of their operation will vary depending on the circumstance of the case. Clauses of this nature are becoming more prevalent in other standard forms, and also in amendments to standard forms and bespoke contracts.

This is an extract from a paper entitled ***Time Bar Clauses*** written by Nicholas Gould and given to the FIDIC Contracts Conference 2007: Practical Legal Considerations on Major International Projects. A full copy of the article and other papers given at the conference can be found at www.fenwickelliott.co.uk/pages/news.htm.

To see further articles on matters relating to construction, engineering and energy projects, please visit www.fenwickelliott.co.uk.

- Which contract to be used



FIDIC guidance on enforcing DAB decisions

FIDIC, as is well known, are currently finalising a new amended version of the Yellow Book. In a taste of what is to come, on 1 April 2013 the FIDIC Contracts Committee issued a Guidance Note dealing with the powers of, effect of and the enforcement of Dispute Adjudication Board (“DAB”) decisions.

The purpose of the Guidance Note is to clarify clause 20 of the General Conditions of the Rainbow Suite or 1999 Conditions of Contract. The guidance is intended to address the question of how one enforces DAB decisions that are binding but not yet final.

FIDIC say that their intention is to make it explicit and clear that the failure to comply with a DAB decision should be capable of being referred to arbitration under sub-clause 20.6 without the need first to obtain a further DAB decision under sub-clause 20.4 and to comply with the amicable settlement provisions of sub-clause 20.5.

Such an approach will be familiar to those who operate in jurisdictions where shortform adjudication has been introduced (for example the Housing Grants, Construction and Regeneration Act in the UK) and where decisions that are binding and not yet final can be immediately enforced. Indeed the Building and Construction Industry Security of Payment Act 2006 in Singapore goes as far as to state that an application for review of an adjudicator’s decision can only be heard if that decision has actually been paid.

The idea behind clause 20.4 is that whether or not a party has given notice of its dissatisfaction, the DAB’s decision should be immediately binding on the parties and they must comply with it promptly.

If a party fails to comply with a DAB decision and that decision has become final, sub-clause 20.7 already provides for a party to refer the other party’s failure to comply with such a decision direct to arbitration.

However, if the DAB decision is binding but not final (i.e. the “losing” party has served a notice of dissatisfaction), there is now doubt about whether or not there is a straightforward route to enforcing that decision.

The reason why FIDIC has issued this guidance now owes much to the discussion and disagreement that followed the Singapore case of *CRW Joint Operation v PT Perusahaan Gas Legara (Persero) TBK* [2011] SGCA 33. Here, the Singapore Court of Appeal held that an Arbitral Tribunal had, by summarily enforcing a binding but non-final DAB decision by way of a final award without a hearing on the merits, acted in a way which was: “*unprecedented and more crucially, entirely unwarranted under the 1999 FIDIC Conditions of Contract*”.



The problem for the court was that the Arbitral Tribunal had assumed that they should not open up, review and revise a DAB decision which was the subject of a notice of dissatisfaction.

The Singapore case examined the grounds for setting aside arbitration awards in construction-related disputes.

If, within 28 days after receiving a dispute adjudication board (DAB) decision, either party gives notice to the other party that it is dissatisfied with the decision, the decision will be binding but not final. This case looked at whether a party may refer to arbitration the failure of the other party to comply with a DAB decision that is binding but not final.

However, where a party does not comply with the DAB decision and where the Singapore case is followed, the decision of the dispute board itself cannot simply be enforced as an arbitral award, without some form of arbitration, or local court litigation (where the contract permits it), which opens up and reviews again the issues decided by the DAB. This is particularly unhelpful to a contractor who has been awarded money. It is to avoid similar problems in the future, that FIDIC has now issued the Guidance Note which suggests amendments to clause 20.

The Guidance Note follows the approach to be found particularly in sub-clause 20.9 of the FIDIC Gold Book. It provides a new sub-clause 20.4, and amends the wording to sub-clause 20.7 as well as providing further provisions at clauses 14.6 and 14.7.

The amendments are for use in the Red Book, Silver Book and Yellow Book. The Gold Book already adopts a different approach, and so the amendments proposed in the Guidance Note should not be used in their current state. FIDIC recommends the introduction of a new penultimate paragraph of sub-clause 20.4:

“If the decision of the DAB requires a payment by one Party to the other Party, the DAB may require the payee to provide an appropriate security in respect of such payment.”

This gives the DAB a contractual right or power to order one party to provide security. The DAB cannot force a party to comply, and so once again a party may have to go to arbitration in order to obtain an appropriate sanction and then seek to enforce that award in an appropriate court.

In relation to the payment provisions in clause 14, a payment under sub-clause 14.6 “shall” now include any amounts due to or from the contractor in accordance with the DAB’s decision. Sub-clause 14.7 further requires that amounts due under a DAB decision be included within any Interim Payment Certificate that is to be issued.

The intention here is that any amount ordered by the DAB to be paid should be included within an assessment of payment made by the engineer or the Employer’s Representative, and then included within the Interim Payment. Failure to do so is simply a further breach.

Sub-clause 20.7 is then deleted and replaced with the following:

“In the event that a Party fails to comply with any decision of the DAB, whether binding or final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.6 [Arbitration] for summary or other expedited relief, as may be appropriate. Sub-Clause 20.4 [obtain Dispute Adjudication Board’s Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply to this reference.”

Sub-clause 20.7 relates to decisions that are either binding or final and binding. Therefore regardless of any notice of dissatisfaction, or more importantly any arguments or issues as to the adequacy or timing of any notice of dissatisfaction, a valid referral can be made to arbitration.

The amendment also clarifies that the parties expect a summary or expedited relief to be used if and as appropriate. That said, the ICC’s emergency arbitrator provisions are unlikely to be appropriate.

This is because they are for use when the contract itself does not provide for an expedited procedure.

A DAB dispute resolution procedure is such an expedited procedure. Therefore it is probably more appropriate to commence arbitration and seek an immediate award for payment if there is any failure to honour the DAB decision.



Of course, this guidance will only apply to future contracts, where the amendment is negotiated and agreed. However for current contracts, the likelihood must be that it will be more difficult for a party to persuade a court or tribunal that the current (1999) drafting does actually achieve FIDIC's intentions that the DAB decision, if it is not followed, can be summarily enforced.

The issuing of contract amendments will be used as proof that the existing contract form does not achieve this aim. By simply issuing guidance that the Singapore Court of Appeal's decision was contrary to FIDIC's intentions regarding the operation of clause 20, FIDIC may have had a different effect. But by issuing amendments to the existing contract, FIDIC have gone further and might be said to have admitted that their existing contract was not sufficiently clear.

That said, it is useful to know now some of the changes that are likely to appear in the new FIDIC Form, and the Guidance Note itself is a useful reminder of the need for clarity and certainty within tiered dispute resolution provisions, not only in FIDIC and other standard forms but also bespoke construction contracts.

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Adjudication: set-off against an adjudicator's decision and other cases

Thameside Construction Co Ltd v Mr & Mrs Stevens [2013] EWHC 2071 (TCC)

Mr and Mrs Stevens employed Thameside to carry out extensive construction works at their home.

Thameside served a Notice of Adjudication claiming that a dispute had arisen “following the Employer’s failure to pay amounts due” and seeking “a peremptory Decision from the Adjudicator”.

The Notice sought £190k and that Mr and Mrs Stevens should pay such sum “without set-off”. Mr and Mrs Stevens’ Response noted that the adjudicator had not been asked to determine the question of practical completion and so this fell outside of his jurisdiction.

They also asserted that a final certificate could not be issued due to quality and other issues and raised a counterclaim, £88k for defects and £60k for liquidated damages, which they said they were entitled to set-off against any sum decided to be due to Thameside.

Thameside said that no counterclaim could be raised as there was no withholding notice. The Adjudicator awarded Thameside £88k and specifically on one of the supporting schedules put the figure of £0.00 against the LADs.

Six days later the Contract Administrator issued an Interim Payment certificate, certifying a net sum due for payment of £88k. On the same day, Mr and Mrs Stevens wrote to Thameside purporting to give a withholding notice stating that it was their intention to withhold payment of £40k in relation to liquidated damages.

They paid the balance. In the enforcement proceedings, Mr and Mrs Stevens said that the decision could be and was to be treated in effect as equivalent to an interim certificate and they were therefore entitled to set-off or withhold against the sum payable pursuant to the decision provided that the withholding was done in accordance with the contract between the parties.

Having reviewed the previous cases, Mr Justice Akenhead set out the following “broad conclusions” on the issues arising where a party seeks to set-off against or withhold from sums which an adjudicator has said are to be paid:

“(a) The first exercise should be to interpret or construe what the adjudicator has decided. In that context, one can look at the dispute as it was referred to him or her. That can involve looking at the Notice of Adjudication, the Referral Notice, the Response and other “pleading” type documents. One can have regard to the underlying construction contract. Primarily, one needs to look at the decision itself.

(b) In looking at what the adjudicator decided, one can distinguish between the decisive and directive parts of the decision on the one hand and the reasoning on the other, although the decisive and directive parts need to be construed to include other findings which form an essential component of or basis for the decision (see Hyder).

(c) The general position is that adjudicators' decisions which direct that one or other party is to pay money are to be honoured and that no set-off or withholding against payment of that amount should be permitted.

(d) There are limited exceptions. If there is a specified contractual right to set-off which does not offend against the statutory requirement for immediate enforcement of an adjudicator's decision, that is an exception albeit that it will be a relatively rare one. Where an adjudicator is simply declaring that an overall amount is due or is due for certification, rather than directing that a balance should actually be paid, it may well be that a legitimate set-off or withholding may be justified when that amount falls due for payment or certification in the future.

(e) Where otherwise it can be determined from the adjudicator's decision that the adjudicator is permitting a further set-off to be made against the sum otherwise decided as payable, that may well be sufficient to allow the set-off to be made

Here, if you just looked at the wording used by the adjudicator, there could be no doubt that there would be no right of set-off or withholding. The adjudicator directed that payment should be made within 14 days and made it clear that he had allowed nothing for liquidated damages and that there should be no set-off albeit that Mr and Mrs Stevens were entitled to set-off the specific sums already allowed to them in the adjudicator's calculations.

However some confusion arose because the adjudicator formed the view that issues as to the date of practical completion, extension of time and liquidated damages should be left over "to another day". This provisional view was set out in a footnote, which was described by the Judge as being in the nature of an obiter type of finding, albeit it was clearly not part of the decision.

The Judge was of the view that, in deferring this issue "to another day", the adjudicator had fallen into error. The issue of liquidated damages was part of the dispute which he was required to resolve because it was raised at least as a defence by way of set-off to the disputed claim put before him. Although Mr and Mrs Stevens had stated that "the question of whether practical completion was achieved" fell outside his jurisdiction, what did not fall outside his jurisdiction was the question of whether there was any entitlement to liquidated damages, something which involved considering issues related to the question of when practical completion was achieved.

Of course, Mr and Mrs Stevens actually paid out over half of what the adjudicator ordered and in that sense had accepted that he had jurisdiction. This was why they argued that the adjudicator was treating his decision as if it were an interim certificate and hence he must be taken to have envisaged that there could be a later set-off or withholding against his decision.

However taking the decision as a whole, the adjudicator was explaining his reasons as to why he was ordering an immediate payment. The adjudicator was not saying that he was expecting, anticipating or permitting the loser in the adjudication to be able to set-off the clearly and obviously disputed claim for liquidated damages.

The adjudicator did not, for example limit himself simply to declaring what the net sum outstanding was; he actually directed that payment of the sum was to be made. There was no good reason to assume that the adjudicator meant anything other than that the specified sum would be paid within 14 days.

That said, the Judge noted that Mr and Mrs Stevens were not left without a remedy: they could themselves proceed to adjudication or to a final dispute resolution in respect of the liquidated damages claim. However, they did have to pay the £40k plus costs.

Adjudication: breach of natural justice

ABB Ltd v Bam Nuttall Ltd
[2013] EWHC 1983 (TCC)

Here, the Claimant successfully argued that an adjudicator's decision should not be enforced because there had been a material breach of the rules of natural justice. It was common ground that the adjudicator had referred in his decision to a particular clause of the contract which neither party had raised and which the adjudicator did not refer to the parties before issuing his decision.

Mr Justice Akenhead said it was perfectly legitimate for an adjudicator to raise new points with the parties and invite comment, argument or even evidence. Having done that, it will generally be perfectly fair and proper for an adjudicator to rely upon that point in reaching his decision. That did not happen here and the issue was an important one.

The Judge noted that:

“Even if an adjudicator’s breach of the rules of natural justice relates only to a material or actual or potentially important part of the decision, that can be enough to lead to the decision becoming wholly unenforceable essentially because the parties (or at least the losing party) and the Court can have no confidence in the fairness of the decision making process.”

Public procurement - the 30-day time limit

Corelogic Ltd v Bristol City Council
[2013] EWHC 2088 (TCC)

This case, where Corelogic sought to amend its Claim arising out of an alleged breach of the procurement regulations, provides a useful reminder about the 30-day limitation period that applies.

Claims must be issued and served in this period which runs from the date when a claimant first knew or ought to have known that grounds for starting proceedings had arisen.

A party cannot seek to get round this by adding “new claims” which, at the time of the amendment, are barred by limitation.

Corelogic were told on 22 March 2013 that their tender was not successful. Two days later, they asked for a debrief. On 27 March 2013, Bristol extended the standstill period until 8 April and provided some information.

Correspondence continued with some further information being provided. Eventually Corelogic issued proceedings and asked for a general extension of time for service of the Particulars of Claim.

Bristol agreed and again further correspondence followed until on 17 June 2013, Corelogic’s solicitors wrote to Bristol with a draft amendment to the Claim Form.

Bristol objected saying that this would raise new causes of action and so would be statute barred under Regulation 47D (2).

The problem was this. The Claim Form was based on complaints relating to the lack of provision of appropriate information prior to the issue of the Claim. The draft amended Particulars relied on other alleged breaches such as the “manifest error of assessment”, “failure to treat tenderers equally or act in a transparent way”, “failure to clarify” and the use of “undisclosed criteria”.

Bristol argued that the addition of these items did raise new claims because the Claim Form in its original wording only related to the alleged inadequate provision of information post-tender.

It was agreed that the standard of knowledge required to start time running in these types of case was a knowledge of the facts which apparently clearly indicate, though they need not absolutely prove, an “infringement”.

It was also accepted that if one was just construing the words on the Claim Form, they could and would be taken to be referring only to complaints about failure, post-award, on the part of Bristol, to provide the requisite information to the unsuccessful tenderer. All the complaints raised in correspondence before the Claim Form was issued related to the non-provision of information to which Corelogic thought it was entitled.

The amendments which added breaches for manifest error in the assessment of the Claimant's tender price and for the nondisclosure of formulae for translating prices into scores, therefore raised new claims.

Corelogic attempted to argue that all the claims arose out of the same or substantially the same facts. However, the original complaint related to the period after the tender was rejected and arose in the post-award period whilst the new complaints related to the award of the contract and the period leading up to it. This meant that the amendments were barred by limitation.

Corelogic had been aware since 9 May 2013, if not before, that the new claims could be pursued. Its letter of that date set out in sufficient detail the new complaints and no further information was provided to it by Bristol thereafter.

Thirty days had clearly elapsed.

That left the question as to whether there was a "good reason" for permitting an extension. None was put forward. The amendments were not allowed



COMPLAINTS ABOUT ARBITRATION

A constant complaint among companies and counsel is that arbitration is becoming too much like litigation. Arbitration is not faster and cheaper, claim disputants, and some statistical evidence supports that contention.

American Arbitration Association (“AAA”) statistics reveal that it takes approximately 10 months from initiation to final result to arbitrate construction matters valued between \$75,000 and \$500,000. Cases with values in excess of \$1,000,000 or more averaged 19 months from filing to award.

These comparisons are true for legal sectors such as construction, securities and employment. Based on these statistics, arbitration’s long-held promise of offering more expedient justice than traditional litigation has been questioned by some practitioners and arbitral organizations.

Similarly, arbitration’s cost-effectiveness has been debated. The costs associated with lengthy arbitration can be substantial. Not only do parties in arbitration incur attorneys’ fees and expert costs, but the parties are also responsible for paying the fees of arbitrators as well as other administrative fees. These fees typically increase as the amount in controversy rises. Additionally, the expenses of the arbitrator(s) are paid by the parties. Most complex disputes involve a panel of three arbitrators.

In large cases, these costs will be substantial. While there may be significant cost savings in arbitration if the parties do not push for extensive discovery, the substantial discrepancy in fees and administrative costs can quickly eviscerate savings.

Many reforms have been implemented to improve arbitration, in addition to expedited procedures. *The College of Commercial Arbitrators Guide to Best Practices in Commercial Arbitration* (Juris Pub. 2006) and *Protocols for Expeditious, Cost-Effective Commercial Arbitration* (2010 www.thecca.net) are major efforts in that regard, offering advice and best practices on appointment and disclosure, conduct of neutral and non-neutral arbitration, arbitrability, class procedures, pre-hearing procedures, motions, discovery, hearings, awards and an overview of international arbitration.

These reforms depend largely on arbitrator training and administrative expertise, and have been embraced by arbitrators and tribunals. Establishing procedural rules to mandate expedited arbitration has also been a major initiative among tribunals, but has not to date gained widespread acceptance in the contracting process.

AVAILABLE EXPEDITED ARBITRATION PROCEDURES

In response to criticisms about arbitration, prominent arbitration tribunals enacted rules for expedited arbitration. Two sets of arbitration rules were promulgated in 2006 by the International Institute for Conflict Prevention & Resolution (**CPR**) and by Swiss Chambers Arbitration/Swiss Rules of International Arbitration (**SCA**) with the intent of expediting arbitration procedures.

As of October 1, 2010, JAMS enacted “Optional Expedited Arbitration Procedures, whereby parties can choose a process that limits depositions, document requests and e-discovery.” Each of these sets of rules has the objective of allowing parties to select an expedited resolution process, either during the contracting process or during the arbitration itself.

JAMS

Effective July 15, 2009, JAMS issued a revised set of Engineering Construction Arbitration Rules & Procedures for Expedited Arbitration (JAMS Expedited Construction Rules).

The JAMS Expedited Construction Rules are intended “to govern binding arbitrations of disputes administered by JAMS and related to or arising out of contracts pertaining to the built environment (including, without limitation, claims involving architecture, engineering, construction, surety bonds, surety indemnity, building materials, lending, insurance, equipment and trade practice and usage), where the Parties have agreed to expedited arbitration.

The JAMS Expedited Construction Rules include:

- Detailed provisions for electronic filing and exchange of pleadings, submissions and other documents;
- Interim measures;
- Consolidation of related arbitrations;
- Third party intervention or participation;
- Default appointment of one sole arbitrator, unless otherwise agreed by the parties;
- Telephonic conferences;
- Document disclosure and exchanges of summaries of anticipated fact and expert witness testimony, noting further that “... [depositions will not be taken except upon a showing of exceptional need] ...”;
- Summary disposition of claims, either by agreement of the parties or at the request of one party;

- Hearings scheduled “no later than four (4) months from the date of the Preliminary Conference”;
- Written witness statements in the discretion of the arbitrator;
- Hearings based on written submissions with agreement of the parties;
- Telephonic hearings with the agreement of the parties “or in the discretion of the Arbitrator”;
- Final awards within 20 days after the date of the close of the hearing;
- Provisions for sanctions against a party failing to comply with obligations under the Rules; and
- Optional “bracketed” (High-Low) or final offer (Baseball) arbitration.

The complete rules can be found online at www.jamsadr.com/construction-practice/

International Institute for Conflict Prevention & Resolution (CPR)

CPR developed an expedited arbitration procedure, effective June 2006, modeled on the United Kingdom’s construction adjudication process.

- A 100-day hearing window follows the pre-hearing conference (60 days for discovery, 30 days for hearing, and 10 days for the award);
- Three arbitrators (one selected by each party, the third selected by both), with the option to opt for one or three arbitrators all appointed by CPR; if the parties do not select arbitrators in time, CPR appoints them;
- Statement of Claim and Statement of Defense must include copies of all documents that the party intends to use and summaries of all witness testimonies;
- Arbitrator(s) may appoint a neutral expert;
- Parties may have a mediator sit in on arbitration to conduct simultaneous mediation;
- Parties may use a list of non-lawyer CPR arbitrators whose calendars are less congested; and
- Discovery rules include aspiration that arbitrator(s) ensure depositions are “brief” and e-discovery is “narrow” – within strict 60-day time frame.

Swiss Chambers Arbitration/Swiss Rules of International Arbitration (SCA)

The Swiss Rules (Section V) are generally modeled on the UNCITRAL rules, discussed below.

- Referral to a single arbitrator unless the arbitration agreement provides otherwise;
- Award within six months of transmitting file to arbitral tribunal; and
- Single hearing for examination of witnesses and experts, as well as oral argument, unless case submitted entirely on documentary evidence.

UNCITRAL

The UNCITRAL Arbitration Rules were revised effective August 15, 2010 following a lengthy report issued by Jan Paulsson and Georgios Petrochilos in April 2006 listing recommendations for revising the 1976 arbitration rules.

The 2010 rules were intended to update the 1976 rules and reflect advancements in arbitration processes in the 30 years since their enactment.

Some aspects of the rules that enhance expedited resolution include:

- Empowerment of the tribunal to “avoid unnecessary delay and expense” and “provide a fair and efficient process.”
- Requirement of a detailed statement of claim, including, insofar as possible, attachment of evidence relied upon and citations to evidence and similar requirements for the statement of defense;
- Limiting time for submission of statements to 45 days absent a determination by the tribunal that more time is warranted;
- Empowering the tribunal to consider witness testimony remotely and to appoint neutral experts if warranted; and
- Providing that “in principle” the costs of the arbitration will be paid by the unsuccessful party or parties, with the tribunal having authority to apportion costs.

Although the UNCITRAL rules leave much to the discretion of the arbitral tribunal, the framework permits expected and efficient resolution if the arbitrators perform their function well.

Other Arbitration tribunals throughout the world have joined the expedited rules groundswell, including ADR Chambers Canada; Swedish Arbitration Institute of the Stockholm Chamber of Commerce; Arbitration Institute Finland; and the Arbitration Foundation of Southern Africa.

FACILITATING RULES

Many international arbitration institutions have rules that promote the efficiency of arbitration. However, these rules are more discretionary and do not aggressively push for greater efficiency. The following are methods promoted by some institutions to encourage efficiency.

- Provisional timetables ensure that the arbitrator will be available sooner and discipline the parties to keep the arbitration moving;
- Settlements are encouraged by rules that give consent awards the same force as final awards;
- Written direct testimony limits hearing time to cross-examination (However, written direct testimony may not be appropriate where there are complex facts or significant details, or where credibility is at issue.);
- Confrontation testimony, the simultaneous questioning of multiple witnesses on the same issues;
- Pre-hearing expert conferences, where opposing experts (without counsel) meet and confer with the arbitrator to identify the narrow set of issues on which there is disagreement; and
- When parties on the same side are unable to appoint an arbitrator, an external Appointing Authority will appoint the entire tribunal. (This was a recommendation in the Paulsson UNCITRAL report but has already been adopted by other institutions).

RESPONSE OF CONTRACTING PARTIES

Contract drafters have not yet widely incorporated the expedited rules into their arbitration agreements, and contracting parties do not seem to be insisting on their use. By contrast, step process negotiation and mediation as conditions to arbitration flourish, indicating a willingness of parties to extend the time frame for dispute resolution if a negotiated settlement can be obtained.

Seemingly, parties are less concerned about a few months delay in dispute resolution when the promise of settlement exists, than they are when the fight has quickened into arbitration.

Once the formal arbitration is commenced, disputants purport to want a speedy resolution, but many countervailing needs may combine to extend the process. First, absent specific election of an expedited process or a contractual limitation on the number of arbitrators, larger disputes will default to a three arbitrator panel.

As noted above, the time required to constitute the panel; the time required to schedule a hearing of any length; and the cost of panel compensation and expenses all add to the complaint that arbitration is not faster and cheaper than court.

Many disputants believe these costs are justified, because a panel of qualified (and industry specific) arbitrators is viewed as one of the principal advantages of arbitration over a court or jury trial.

In addition, most counsel in larger disputes agree that some discovery is warranted. At a minimum, a document exchange is customary in most arbitrations. In larger complex cases, this exchange and related reviews can be costly – just as it would be in litigation.

Electronic discovery and exchange of massive amounts of data are perceived as important to ensure that complex cases are fully discovered and evaluated. In U.S. arbitrations, discovery often goes farther; parties in complex cases frequently agree on deposition discovery.

In this regard, disputants are showing that they prefer knowledge about the case, claims and defenses, to speed and cost savings. The market forces in complex cases therefore tend to show that perceived “economy” results from spending more money and time on the resolution process in the hope of receiving a better or more predictable award.

Of course, contracting parties in the heat of a dispute may not agree on steps or “best practices” that will expedite the arbitration process. Arbitrators will inevitably try to be fair to both parties, which results in compromise that would not be permitted if the contract mandated the use of expedited rules.

Knowing this, it would seem that contract drafters would favor the use of expedited rules, perhaps customized to account for very large disputes to which they may be less favorable.

Thus far, and notwithstanding the continued complaints about arbitration becoming more like litigation, the expedited rules remain a tool infrequently used at the contract drafting stage, and infrequently adopted during the dispute in major complex matters.

The task of ensuring that arbitration is an efficient remedy is therefore often left to the arbitrators, underscoring the importance of selecting experienced and qualified arbitrators to preside over disputes.

Ten Mistakes Owners Make that Cause Disputes

After nearly four decades as a contracting officer, construction manager and construction claims consultant, I have concluded that owners routinely make a number of mistakes on projects that actually cause disputes. These are the following.

1. Solving contractor problems

Owners want projects completed on time and in budget. When the contractor encounters problems on the jobsite owners want resolution now. When contractors appear to be dragging their feet over a problem, owners often step in and direct a solution.

If the problem was truly the contractor's problem, not something caused by the owner, the directed solution may make the owner liable. In this case owners voluntarily make the contractor's problem their own.

Should this happen the owner may owe compensation and time to implement the solution. If a contractor poses a problem not of the owner's making, owners should provide suggestions, not direction.

2. Proceeding with changes or variations before time and cost are agreed upon

When a need for a change or variation arises, owners may feel pressured to proceed before the time and cost of the change or variation is negotiated.

By authorizing the contractor to proceed with the work before agreement on time and cost is reached, the owner's negotiating position evaporates. When directed change or instructed variations (also known as force account or time and material changes) are issued, the owner is at risk for the time and cost of the change or variation — regardless of how much higher these are than the owner thought at the outset.

Owners are better advised to negotiate prospectively priced change orders or variation orders. Owners can learn the total time and cost impact before the work is underway and reach a business decision on whether the change or variation is worth the impact.

3. Failing to agree on the cost of changes or variations on a daily basis when directed changes or instructed variations are employed

When directed changes or instructed variation directives are issued by the owner, many do not demand that the contractor provide a daily record of labor, equipment, materials, etc.

Failure to obtain a daily record of the changed or variation work may lead to higher costs. Failure to obtain and review the daily record of changes or variations denies the owner the opportunity to check on mitigation of damages.

When a directed change or instructed variation directive is issued, one of the terms should be that the contractor shall provide a detailed daily record of the work involved in the change or variation to the owner.

4. Not understanding the contract

Owners frequently modify standard form contract documents but fail to train their own staff in the meaning and intent of the revised terms and conditions.

The owner's staff may be left with a poor understanding of what is in the contract and the intent of various clauses. When questions are raised by the contractor about various sections of the contract, owner's staff may provide inaccurate responses which later develop into disputes.

To avoid this situation, owners must train their staff about the contract — its contents and intent. If they know the contract and can explain it to contractors correctly, there is less likelihood of a dispute arising.

5. Using Requests for Information and contract interpretations to correct errors or redesign the project

Drawings and specifications sometimes require changes or variations to correct errors. Other times, owners decide to make other changes or variations to the plans. In either case, the contractor is typically owed additional cost and/or an extension of time.

At times, however, owners or design professionals attempt to use interpretations or responses to Requests for Information to direct changes or variations to the work at the expense of the contractor.

Should a scope of work need to be revised to overcome an error in the original documents or to provide for a change or variation the owner wants then owners must acknowledge their responsibility and instruct, or preferably agree upon a change or variation order with the contractor.

6. Objecting to written notices

Owners include numerous notice provisions in contract documents. Such requirements are intended to benefit the owner by bringing to their attention events and actions that may have potential impact to the time and cost of the project.

Notwithstanding the clear benefit of written notices, many owners object when contractors file notices of time and cost impact. Some owners actively attempt to

discourage contractors from submitting written notices despite the clear requirements of the contract.

To avoid disputes concerning lack of timely written notice owners should discuss notice requirements with the contractor and encourage them to submit written notices whenever called for in the contract and then take appropriate action.

7. Requiring contractors to finance project change or variations

Construction is usually done on a cost reimbursement basis in that the contractor first spends their money to perform the work and only then can they request payment for work installed.

Owners occasionally attempt to take advantage of their cash flow control position when faced with very large changes or variations. Owners may direct the contractor to proceed on a directed change or instructed variation basis knowing full well that the change or variation will take much time to be installed.

As directed changes or instructed variations are often not paid until the work is in place, this has the effect of requiring the contractor to finance the owner's changes or variations. When an owner determines a need for a large change or variation, the easiest way to avoid a dispute over the financing of the change or variation is to negotiate and execute a prospectively priced change or variation order.

Once executed, the change or variation order can be added as a pay item to the schedule of values and the contractor can seek payment routinely as the changed or variation work is installed.

8. Refusing to deal with extensions of time in a timely manner

The majority of changes or variations do not delay the outcome of the project, but some will. Owners may fear settling extensions of time when changes or variations are ordered, especially if the change or variation is issued early in the project.

Owners say "What if I grant an extension of time now and it turns out the contractor really doesn't need it at the end of the project?" As a result of this doubt, owners may refuse to deal with extensions of time preferring to wait until later in the project "when the contractor really needs the time."

Accordingly, contractors struggle to reserve their rights to delay and impact claims, planting the seeds for a later dispute. They argue the owner breached their agreement by not administering the contract properly; they may accelerate work to protect themselves against liquidated damages; they argue constructive acceleration or that time is now "at large" and they are only obligated to deliver the project "within a reasonable time"; etc.

All can lead to a dispute at the end of the project. And, all are avoidable if the owner adheres to the terms of the contract and grants extensions of time when impacts to the end date of the work are demonstrated.

9. Refusing to deal with indirect costs when change or variation orders are issued

As with the extension of time issue, many owners refuse to deal with the impact of changes or variations. These are typically soft cost claims — lost productivity, extended field costs, etc.

It is well known that multiple changes or variations can cause indirect costs far in excess of direct costs. Indirect cost claims often arise at the end of the work because the owner refused to deal with them earlier. At the end of the work, however, the contractor may pursue decreased profit margin in addition to cumulative impact, mixing the two together in hopes that the owner cannot disaggregate the costs.

The way to avoid end of job claims is to work with the contractor when a change or variation order is being negotiated to determine what impacts are likely to result. Negotiate a reasonable cost for the indirect costs and include it in the change or variation order.

10. Failing to settle change or variation orders “full and final”

Many contractors seek to hedge their bet during the work by reserving their rights to delay and cumulative impact until the end of the project. And, owners allow this. At the end of the project it is likely that some element of decreased margin will be included in a cumulative impact claim.

Owners now are arguing over what impact was caused by changes or variations and how much of the claimed cost is simply trying to recover for other problems unrelated to the changes or variations. To avoid this situation owners should negotiate the full time and cost of each change or variation order including indirect costs, preferably prior to work being performed in the field, and then include waiver language precluding the contractor from resurrecting settled changes or variations at the end of the project.

(To determine such language, a knowledgeable construction attorney or barrister should be consulted.)

Construction projects are a fertile field, ripe for disputes. There are many parties involved in a construction project and the opportunity for things to go awry is significant. However, many disputes are self-inflicted. Owners who make one or more of the mistakes above invite such disputes. Each is avoidable if the owner adheres to the terms of their contract, deals with the contractor fairly, and proactively addresses issues as they arise.

ABOUT THIS ARTICLE AUTHOR

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Mr. Zack has been involved with claims throughout the United States, Canada, Egypt, China, Germany, Kazakhstan, Saudi Arabia, Tatarstan, The Russian Federation, Saudi Arabia and Trinidad and Tobago. He has been involved in more than 5,000 claims and has been designated as an expert witness in mediation, arbitration and litigation.

Mr. Zack is a Fellow of AACE International and the Royal Institution of Chartered Surveyors (RICS). He is a Certified Forensic Claims Consultant, a Certified Construction Manager and a Project Management Professional. Mr. Zack is a nationally known author, speaker and trainer concerning the management, mitigation and resolution of construction claims on public works projects.



CODE OF ETHICS FOR ARBITRATORS

The Code of Ethics for Arbitrators in Commercial Disputes was originally prepared in 1977 by a joint committee consisting of a special committee of the American Arbitration Association and a special committee of the American Bar Association.

The present revision is the result of a process begun by the Arbitration Committee of the ABA Section of Dispute Resolution in 1995; representatives of other ABA Committees and Sections, the American Arbitration Association, and the CPR Institute participated in the development of the present text. CPR adopted the Code of Ethics in 2005 in all respects except to whatever extent it may conflict with CPR arbitration rules.

Preamble

The use of arbitration to resolve a wide variety of disputes has grown extensively and forms a significant part of the system of justice on which our society relies for a fair determination of legal rights. Persons who act as arbitrators therefore undertake serious responsibilities to the public, as well as to the parties. Those responsibilities include important ethical obligations.

Few cases of unethical behavior by commercial arbitrators have arisen. Nevertheless, this Code sets forth generally accepted standards of ethical conduct for the guidance of arbitrators and parties in commercial disputes, in the hope of contributing to the maintenance of high standards and continued confidence in the process of arbitration.

This Code provides ethical guidelines for many types of arbitration but does not apply to labor arbitration, which is generally conducted under the Code of Professional Responsibility for Arbitrators of Labor-Management Disputes.

There are many different types of commercial arbitration. Some proceedings are conducted under arbitration rules established by various organizations and trade associations, while others are conducted without such rules.

Although most proceedings are arbitrated pursuant to voluntary agreement of the parties, certain types of disputes are submitted to arbitration by reason of particular laws. This Code is intended to apply to all such proceedings in which disputes or claims are submitted for decision to one or more arbitrators appointed in a manner provided by an agreement of the parties, by applicable arbitration rules, or by law.

In all such cases, the persons who have the power to decide should observe fundamental standards of ethical conduct. In this Code, all such persons are called arbitrators, although in some types of proceeding they might be called umpires, referees, neutrals, or have some other title.

Arbitrators, like judges, have the power to decide cases. However, unlike full-time judges, arbitrators are usually engaged in other occupations before, during, and after the time that they serve as arbitrators. Often, arbitrators are purposely chosen from the same trade or industry as the parties in order to bring special knowledge to the task of deciding. This Code recognizes these fundamental differences between arbitrators and judges.

In those instances where this Code has been approved and recommended by organizations that provide, coordinate, or administer services of arbitrators, it provides ethical standards for the members of their respective panels of arbitrators. However, this Code does not form a part of the arbitration rules of any such organization unless its rules so provide.

Note on Neutrality

In some types of commercial arbitration, the parties or the administering institution provide for three or more arbitrators. In some such proceedings, it is the practice for each party, acting alone, to appoint one arbitrator (a party-appointed arbitrator) and for one additional arbitrator to be designated by the party-appointed arbitrators, or by the parties, or by an independent institution or individual.

The sponsors of this Code believe that it is preferable for all arbitrators including any party-appointed arbitrators to be neutral, that is, independent and impartial, and to comply with the same ethical standards. This expectation generally is essential in arbitrations where the parties, the nature of the dispute, or the enforcement of any resulting award may have international aspects.

However, parties in certain domestic arbitrations in the United States may prefer that party-appointed arbitrators be non-neutral and governed by special ethical considerations. These special ethical considerations appear in Canon X of this Code.

This Code establishes a presumption of neutrality for all arbitrators, including party-appointed arbitrators, which applies unless the parties' agreement, the arbitration rules agreed to by the parties or applicable laws provide otherwise. This Code requires all party-appointed arbitrators, whether neutral or not, to make pre-appointment disclosures of any facts which might affect their neutrality, independence, or impartiality.

This Code also requires all party-appointed arbitrators to ascertain and disclose as soon as practicable whether the parties intended for them to serve as neutral or not. If any doubt or uncertainty exists, the party-appointed arbitrators should serve as neutrals unless and until such doubt or uncertainty is resolved in accordance with Canon IX. This Code expects all arbitrators, including those serving under Canon X, to preserve the integrity and fairness of the process.

Note on Construction

Various aspects of the conduct of arbitrators, including some matters covered by this Code, may also be governed by agreements of the parties, arbitration rules to which the parties have agreed, applicable law, or other applicable ethics rules, all of which should be consulted by the arbitrators. This Code does not take the place of or supersede such laws, agreements, or arbitration rules to which the parties have agreed and should be read in conjunction with other rules of ethics. It does not establish new or additional grounds for judicial review of arbitration awards.

All provisions of this Code should therefore be read as subject to contrary provisions of applicable law and arbitration rules. They should also be read as subject to contrary agreements of the parties. Nevertheless, this Code imposes no obligation on any arbitrator to act in a manner inconsistent with the arbitrator's fundamental duty to preserve the integrity and fairness of the arbitral process.

Canons I through VIII of this Code apply to all arbitrators. Canon IX applies to all party-appointed arbitrators, except that certain party-appointed arbitrators are exempted by Canon X from compliance with certain provisions of Canons I-IX related to impartiality and independence, as specified in Canon X.



CANON I. AN ARBITRATOR SHOULD UPHOLD THE INTEGRITY AND FAIRNESS OF THE ARBITRATION PROCESS.

A. An arbitrator has a responsibility not only to the parties, but also to the process of arbitration itself, and must observe high standards of conduct so that the integrity and fairness of the process will be preserved. Accordingly, an arbitrator should recognize a responsibility to the public, to the parties whose rights will be decided, and to all other participants in the proceeding. This responsibility may include pro bono service as an arbitrator where appropriate.

B. One should accept appointment as an arbitrator only if fully satisfied:

- (1) that he or she can serve impartially;
- (2) that he or she can serve independently from the parties, potential witnesses, and the other arbitrators;
- (3) that he or she is competent to serve; and
- (4) that he or she can be available to commence the arbitration in accordance with the requirements of the proceeding and thereafter to devote the time and attention to its completion that the parties are reasonably entitled to expect.

C. After accepting appointment and while serving as an arbitrator, a person should avoid entering into any business, professional, or personal relationship, or acquiring any financial or personal interest, which is likely to affect impartiality or which might reasonably create the appearance of partiality. For a reasonable period of time after the decision of a case, persons who have served as arbitrators should avoid entering into any such relationship, or acquiring any such interest, in circumstances which might reasonably create the appearance that they had been influenced in the arbitration by the anticipation or expectation of the relationship or interest. Existence of any of the matters or circumstances described in this paragraph C does not render it unethical for one to serve as an arbitrator where the parties have consented to the arbitrator's appointment or continued services following full disclosure of the relevant facts in accordance with Canon II.

D. Arbitrators should conduct themselves in a way that is fair to all parties and should not be swayed by outside pressure, public clamor, and fear of criticism or self-interest. They should avoid conduct and statements that give the appearance of partiality toward or against any party.

E. When an arbitrator's authority is derived from the agreement of the parties, an arbitrator should neither exceed that authority nor do less than is required to exercise that authority completely. Where the agreement of the parties sets forth procedures to be followed in conducting the arbitration or refers to rules to be followed, it is the obligation of the arbitrator to comply with such procedures or rules. An arbitrator has no ethical obligation to comply with any agreement, procedures or rules that are unlawful or that, in the arbitrator's judgment, would be inconsistent with this Code.

F. An arbitrator should conduct the arbitration process so as to advance the fair and efficient resolution of the matters submitted for decision. An arbitrator should make all reasonable efforts to prevent delaying tactics, harassment of parties or other participants, or other abuse or disruption of the arbitration process.

G. The ethical obligations of an arbitrator begin upon acceptance of the appointment and continue throughout all stages of the proceeding. In addition, as set forth in this Code, certain ethical obligations begin as soon as a person is requested to serve as an arbitrator and certain ethical obligations continue after the decision in the proceeding has been given to the parties.

H. Once an arbitrator has accepted an appointment, the arbitrator should not withdraw or abandon the appointment unless compelled to do so by unanticipated circumstances that would render it impossible or impracticable to continue. When an arbitrator is to be compensated for his or her services, the arbitrator may withdraw if the parties fail or refuse to provide for payment of the compensation as agreed.

I. An arbitrator who withdraws prior to the completion of the arbitration, whether upon the arbitrator's initiative or upon the request of one or more of the parties, should take reasonable steps to protect the interests of the parties in the arbitration, including return of evidentiary materials and protection of confidentiality.

Comment to Canon I

A prospective arbitrator is not necessarily partial or prejudiced by having acquired knowledge of the parties, the applicable law or the customs and practices of the business involved. Arbitrators may also have special experience or expertise in the areas of business, commerce, or technology which are involved in the arbitration. Arbitrators do not contravene this Canon if, by virtue of such experience or expertise, they have views on certain general issues likely to arise in the arbitration, but an arbitrator may not have prejudged any of the specific factual or legal determinations to be addressed during the arbitration.

During an arbitration, the arbitrator may engage in discourse with the parties or their counsel, draw out arguments or contentions, comment on the law or evidence, make interim rulings, and otherwise control or direct the arbitration. These activities are integral parts of an arbitration. Paragraph D of Canon I is not intended to preclude or limit either full discussion of the issues during the course of the arbitration or the arbitrator's management of the proceeding.

CANON II. AN ARBITRATOR SHOULD DISCLOSE ANY INTEREST OR RELATIONSHIP LIKELY TO AFFECT IMPARTIALITY OR WHICH MIGHT CREATE AN APPEARANCE OF PARTIALITY.

A. Persons who are requested to serve as arbitrators should, before accepting, disclose:

(1) Any known direct or indirect financial or personal interest in the outcome of the arbitration;

(2) Any known existing or past financial, business, professional or personal relationships which might reasonably affect impartiality or lack of independence in the eyes of any of the parties. For example, prospective arbitrators should disclose any such relationships which they personally have with any party or its lawyer, with any co-arbitrator, or with any individual whom they have been told will be a witness. They should also disclose any such relationships involving their families or household members or their current employers, partners, or professional or business associates that can be ascertained by reasonable efforts;

(3) The nature and extent of any prior knowledge they may have of the dispute; and

(4) Any other matters, relationships, or interests which they are obligated to disclose by the agreement of the parties, the rules or practices of an institution, or applicable law regulating arbitrator disclosure.

B. Persons who are requested to accept appointment as arbitrators should make a reasonable effort to inform themselves of any interests or relationships described in paragraph A.

C. The obligation to disclose interests or relationships described in paragraph A is a continuing duty which requires a person who accepts appointment as an arbitrator to disclose, as soon as practicable, at any stage of the arbitration, any such interests or relationships which may arise, or which are recalled or discovered.

D. Any doubt as to whether or not disclosure is to be made should be resolved in favor of disclosure.

E. Disclosure should be made to all parties unless other procedures for disclosure are provided in the agreement of the parties, applicable rules or practices of an institution, or by law. Where more than one arbitrator has been appointed, each should inform the others of all matters disclosed.

F. When parties, with knowledge of a person's interests and relationships, nevertheless desire that person to serve as an arbitrator, that person may properly serve.

G. If an arbitrator is requested by all parties to withdraw, the arbitrator must do so. If an arbitrator is requested to withdraw by less than all of the parties because of alleged partiality, the arbitrator should withdraw unless either of the following circumstances exists:

(1) An agreement of the parties, or arbitration rules agreed to by the parties, or applicable law establishes procedures for determining challenges to arbitrators, in which case those procedures should be followed; or

(2) In the absence of applicable procedures, if the arbitrator, after carefully considering the matter, determines that the reason for the challenge is not substantial, and that he or she can nevertheless act and decide the case impartially and fairly.

H. If compliance by a prospective arbitrator with any provision of this Code would require disclosure of confidential or privileged information, the prospective arbitrator should either:

(1) Secure the consent to the disclosure from the person who furnished the information or the holder of the privilege; or

(2) Withdraw.



CANON III. AN ARBITRATOR SHOULD AVOID IMPROPRIETY OR THE APPEARANCE OF IMPROPRIETY IN COMMUNICATING WITH PARTIES.

A. If an agreement of the parties or applicable arbitration rules establishes the manner or content of communications between the arbitrator and the parties, the arbitrator should follow those procedures notwithstanding any contrary provision of paragraphs B and C.

B. An arbitrator or prospective arbitrator should not discuss a proceeding with any party in the absence of any other party, except in any of the following circumstances:

(1) When the appointment of a prospective arbitrator is being considered, the prospective arbitrator:

(a) may ask about the identities of the parties, counsel, or witnesses and the general nature of the case; and

(b) may respond to inquiries from a party or its counsel designed to determine his or her suitability and availability for the appointment. In any such dialogue, the prospective arbitrator may receive information from a party or its counsel disclosing the general nature of the dispute but should not permit them to discuss the merits of the case.

(2) In an arbitration in which the two party-appointed arbitrators are expected to appoint the third arbitrator, each party-appointed arbitrator may consult with the party who appointed the arbitrator concerning the choice of the third arbitrator;

(3) In an arbitration involving party-appointed arbitrators, each party-appointed arbitrator may consult with the party who appointed the arbitrator concerning arrangements for any compensation to be paid to the party-appointed arbitrator. Submission of routine written requests for payment of compensation and expenses in accordance with such arrangements and written communications pertaining solely to such requests need not be sent to the other party;

(4) In an arbitration involving party-appointed arbitrators, each party-appointed arbitrator may consult with the party who appointed the arbitrator concerning the status of the arbitrator (i.e., neutral or non-neutral), as contemplated by paragraph C of Canon IX;

(5) Discussions may be had with a party concerning such logistical matters as setting the time and place of hearings or making other arrangements for the conduct of the proceedings. However, the arbitrator should promptly inform each other party of the discussion and should not make any final determination concerning the matter discussed before giving each absent party an opportunity to express the party's views; or (6) If a party fails to be present at a hearing after having been given due notice, or if all parties expressly consent, the arbitrator may discuss the case with any party who is present.

C. Unless otherwise provided in this Canon, in applicable arbitration rules or in an agreement of the parties, whenever an arbitrator communicates in writing with one party, the arbitrator should at the same time send a copy of the communication to every other party, and whenever the arbitrator receives any written communication concerning the case from one party which has not already been sent to every other party, the arbitrator should send or cause it to be sent to the other parties.

CANON IV. AN ARBITRATOR SHOULD CONDUCT THE PROCEEDINGS FAIRLY AND DILIGENTLY.

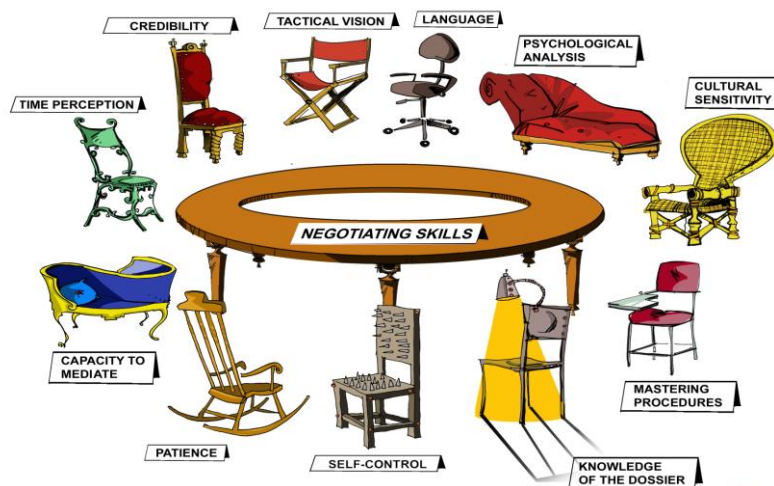
- A. An arbitrator should conduct the proceedings in an even-handed manner. The arbitrator should be patient and courteous to the parties, their representatives, and the witnesses and should encourage similar conduct by all participants.
- B. The arbitrator should afford to all parties the right to be heard and due notice of the time and place of any hearing. The arbitrator should allow each party a fair opportunity to present its evidence and arguments.
- C. The arbitrator should not deny any party the opportunity to be represented by counsel or by any other person chosen by the party.
- D. If a party fails to appear after due notice, the arbitrator should proceed with the arbitration when authorized to do so, but only after receiving assurance that appropriate notice has been given to the absent party.
- E. When the arbitrator determines that more information than has been presented by the parties is required to decide the case, it is not improper for the arbitrator to ask questions, call witnesses, and request documents or other evidence, including expert testimony.
- F. Although it is not improper for an arbitrator to suggest to the parties that they discuss the possibility of settlement or the use of mediation, or other dispute resolution processes, an arbitrator should not exert pressure on any party to settle or to utilize other dispute resolution processes. An arbitrator should not be present or otherwise participate in settlement discussions or act as a mediator unless requested to do so by all parties.
- G. Co-arbitrators should afford each other full opportunity to participate in all aspects of the proceedings.

Comment to paragraph G

Paragraph G of Canon IV is not intended to preclude one arbitrator from acting in limited circumstances (e.g., ruling on discovery issues) where authorized by the agreement of the parties, applicable rules or law, nor does it preclude a majority of the arbitrators from proceeding with any aspect of the arbitration if an arbitrator is unable or unwilling to participate and such action is authorized by the agreement of the parties or applicable rules or law. It also does not preclude ex parte requests for interim relief.

CANON V. AN ARBITRATOR SHOULD MAKE DECISIONS IN A JUST, INDEPENDENT AND DELIBERATE MANNER.

- A. The arbitrator should, after careful deliberation, decide all issues submitted for determination. An arbitrator should decide no other issues.
- B. An arbitrator should decide all matters justly, exercising independent judgment, and should not permit outside pressure to affect the decision.
- C. An arbitrator should not delegate the duty to decide to any other person.
- D. In the event that all parties agree upon a settlement of issues in dispute and request the arbitrator to embody that agreement in an award, the arbitrator may do so, but is not required to do so unless satisfied with the propriety of the terms of settlement. Whenever an arbitrator embodies a settlement by the parties in an award, the arbitrator should state in the award that it is based on an agreement of the parties.



CANON VI. AN ARBITRATOR SHOULD BE FAITHFUL TO THE RELATIONSHIP OF TRUST AND CONFIDENTIALITY INHERENT IN THAT OFFICE.

A. An arbitrator is in a relationship of trust to the parties and should not, at any time, use confidential information acquired during the arbitration proceeding to gain personal advantage or advantage for others, or to affect adversely the interest of another.

B. The arbitrator should keep confidential all matters relating to the arbitration proceedings and decision. An arbitrator may obtain help from an associate, a research assistant or other persons in connection with reaching his or her decision if the arbitrator informs the parties of the use of such assistance and such persons agree to be bound by the provisions of this Canon.

C. It is not proper at any time for an arbitrator to inform anyone of any decision in advance of the time it is given to all parties. In a proceeding in which there is more than one arbitrator, it is not proper at any time for an arbitrator to inform anyone about the substance of the deliberations of the arbitrators. After an arbitration award has been made, it is not proper for an arbitrator to assist in proceedings to enforce or challenge the award.

D. Unless the parties so request, an arbitrator should not appoint himself or herself to a separate office related to the subject matter of the dispute, such as receiver or trustee, nor should a panel of arbitrators appoint one of their number to such an office.

CANON VII. AN ARBITRATOR SHOULD ADHERE TO STANDARDS OF INTEGRITY AND FAIRNESS WHEN MAKING ARRANGEMENTS FOR COMPENSATION AND REIMBURSEMENT OF EXPENSES.

A. Arbitrators who are to be compensated for their services or reimbursed for their expenses shall adhere to standards of integrity and fairness in making arrangements for such payments.

B. Certain practices relating to payments are generally recognized as tending to preserve the integrity and fairness of the arbitration process. These practices include:

(1) Before the arbitrator finally accepts appointment, the basis of payment, including any cancellation fee, compensation in the event of withdrawal and compensation for study and preparation time, and all other charges, should be established. Except for arrangements for the compensation of party-appointed arbitrators, all parties should be informed in writing of the terms established.

(2) In proceedings conducted under the rules or administration of an institution that is available to assist in making arrangements for payments, communication related to compensation should be made through the institution. In proceedings where no institution has been engaged by the parties to administer the arbitration, any communication with arbitrators (other than party appointed arbitrators) concerning payments should be in the presence of all parties; and

(3) Arbitrators should not, absent extraordinary circumstances, request increases in the basis of their compensation during the course of a proceeding.

CANON VIII. AN ARBITRATOR MAY ENGAGE IN ADVERTISING OR PROMOTION OF ARBITRAL SERVICES WHICH IS TRUTHFUL AND ACCURATE.

A. Advertising or promotion of an individual's willingness or availability to serve as an arbitrator must be accurate and unlikely to mislead. Any statements about the quality of the arbitrator's work or the success of the arbitrator's practice must be truthful.

B. Advertising and promotion must not imply any willingness to accept an appointment otherwise than in accordance with this Code.

Comment to Canon VIII

This Canon does not preclude an arbitrator from printing, publishing, or disseminating advertisements conforming to these standards in any electronic or print medium, from making personal presentations to prospective users of arbitral services conforming to such standards or from responding to inquiries concerning the arbitrator's availability, qualifications, experience, or fee arrangements.



CANON IX. ARBITRATORS APPOINTED BY ONE PARTY HAVE A DUTY TO DETERMINE AND DISCLOSE THEIR STATUS AND TO COMPLY WITH THIS CODE, EXCEPT AS EXEMPTED BY CANON X.

A. In some types of arbitration in which there are three arbitrators, it is customary for each party, acting alone, to appoint one arbitrator. The third arbitrator is then appointed by agreement either of the parties or of the two arbitrators, or failing such agreement, by an independent institution or individual. In tripartite arbitrations to which this Code applies, all three arbitrators are presumed to be neutral and are expected to observe the same standards as the third arbitrator.

B. Notwithstanding this presumption, there are certain types of tripartite arbitration in which it is expected by all parties that the two arbitrators appointed by the parties may be predisposed toward the party appointing them. Those arbitrators, referred to in this Code as Canon X arbitrators, are not to be held to the standards of neutrality and independence applicable to other arbitrators. Canon X describes the special ethical obligations of party-appointed arbitrators who are not expected to meet the standard of neutrality.

C. A party-appointed arbitrator has an obligation to ascertain, as early as possible but not later than the first meeting of the arbitrators and parties, whether the parties have agreed that the party-appointed arbitrators will serve as neutrals or whether they shall be subject to Canon X, and to provide a timely report of their conclusions to the parties and other arbitrators:

(1) Party-appointed arbitrators should review the agreement of the parties, the applicable rules and any applicable law bearing upon arbitrator neutrality. In reviewing the agreement of the parties, party-appointed arbitrators should consult any relevant express terms of the written or oral arbitration agreement. It may also be appropriate for them to inquire into agreements that have not been expressly set forth, but which may be implied from an established course of dealings of the parties or well-recognized custom and usage in their trade or profession;

(2) Where party-appointed arbitrators conclude that the parties intended for the party-appointed arbitrators not to serve as neutrals, they should so inform the parties and the other arbitrators. The arbitrators may then act as provided in Canon X unless or until a different determination of their status is made by the parties, any administering institution or the arbitral panel; and

(3) Until party-appointed arbitrators conclude that the party-appointed arbitrators were not intended by the parties to serve as neutrals, or if the party-appointed arbitrators are unable to form a reasonable belief of their status from the foregoing sources and no decision in this regard has yet been made by the parties, any administering institution, or the arbitral panel, they should observe all of the obligations of neutral arbitrators set forth in this Code.

D. Party-appointed arbitrators not governed by Canon X shall observe all of the obligations of Canons I through VIII unless otherwise required by agreement of the parties, any applicable rules, or applicable law.

CANON X. EXEMPTIONS FOR ARBITRATORS APPOINTED BY ONE PARTY WHO ARE NOT SUBJECT TO RULES OF NEUTRALITY.

Canon X arbitrators are expected to observe all of the ethical obligations prescribed by this Code except those from which they are specifically excused by Canon X.

A. Obligations under Canon I

Canon X arbitrators should observe all of the obligations of Canon I subject only to the following provisions:

- (1) Canon X arbitrators may be predisposed toward the party who appointed them but in all other respects are obligated to act in good faith and with integrity and fairness. For example, Canon X arbitrators should not engage in delaying tactics or harassment of any party or witness and should not knowingly make untrue or misleading statements to the other arbitrators; and
- (2) The provisions of subparagraphs B(1), B(2), and paragraphs C and D of Canon I, insofar as they relate to partiality, relationships, and interests are not applicable to Canon X arbitrators.

B. Obligations under Canon II

- (1) Canon X arbitrators should disclose to all parties, and to the other arbitrators, all interests and relationships which Canon II requires be disclosed. Disclosure as required by Canon II is for the benefit not only of the party who appointed the arbitrator, but also for the benefit of the other parties and arbitrators so that they may know of any partiality which may exist or appear to exist; and
- (2) Canon X arbitrators are not obliged to withdraw under paragraph G of Canon II if requested to do so only by the party who did not appoint them.

C. Obligations under Canon III

Canon X arbitrators should observe all of the obligations of Canon III subject only to the following provisions:

- (1) Like neutral party-appointed arbitrators, Canon X arbitrators may consult with the party who appointed them to the extent permitted in paragraph B of Canon III;
- (2) Canon X arbitrators shall, at the earliest practicable time, disclose to the other arbitrators and to the parties whether or not they intend to communicate with their appointing parties. If they have disclosed the intention to engage in such communications, they may thereafter communicate with their appointing parties concerning any other aspect of the case, except as provided in paragraph (3).
- (3) If such communication occurred prior to the time they were appointed as arbitrators, or prior to the first hearing or other meeting of the parties with the arbitrators, the Canon X arbitrator should, at or before the first hearing or meeting of the arbitrators with the parties, disclose the fact that such communication has taken place. In complying with the provisions

of this subparagraph, it is sufficient that there be disclosure of the fact that such communication has occurred without disclosing the content of the communication. A single timely disclosure of the Canon X arbitrator's intention to participate in such communications in the future is sufficient;

(4) Canon X arbitrators may not at any time during the arbitration:

(a) disclose any deliberations by the arbitrators on any matter or issue submitted to them for decision;

(b) communicate with the parties that appointed them concerning any matter or issue taken under consideration by the panel after the record is closed or such matter or issue has been submitted for decision; or

(c) disclose any final decision or interim decision in advance of the time that it is disclosed to all parties.

(5) Unless otherwise agreed by the arbitrators and the parties, a Canon X arbitrator may not communicate orally with the neutral arbitrator concerning any matter or issue arising or expected to arise in the arbitration in the absence of the other Canon X arbitrator. If a Canon X arbitrator communicates in writing with the neutral arbitrator, he or she shall simultaneously provide a copy of the written communication to the other Canon X arbitrator;

(6) When Canon X arbitrators communicate orally with the parties that appointed them concerning any matter on which communication is permitted under this Code, they are not obligated to disclose the contents of such oral communications to any other party or arbitrator; and

(7) When Canon X arbitrators communicate in writing with the party who appointed them concerning any matter on which communication is permitted under this Code, they are not required to send copies of any such written communication to any other party or arbitrator.

D. Obligations under Canon IV

Canon X arbitrators should observe all of the obligations of Canon IV.

E. Obligations under Canon V

Canon X arbitrators should observe all of the obligations of Canon V, except that they may be predisposed toward deciding in favor of the party who appointed them.

F. Obligations under Canon VI

Canon X arbitrators should observe all of the obligations of Canon VI.

G. Obligations Under Canon VII

Canon X arbitrators should observe all of the obligations of Canon VII

H. Obligations Under Canon VIII

Canon X arbitrators should observe all of the obligations of Canon VIII.

I. Obligations Under Canon IX

The provisions of paragraph D of Canon IX are inapplicable to Canon X arbitrators, except insofar as the obligations are also set forth in this Canon.



GLOSSARY OF COMMONLY USED TERMS IN DISPUTES RESOLUTION

Standard of care

In carrying out its responsibilities, the engineer is required to possess and exercise the level of skill and judgment that is accepted among similarly situated design professionals.

Warranty of plans and specifications

The owner extends an implied warranty to the contractor that the plans and specifications are accurate, complete, and suitable for the successful construction of the project. The engineer therefore has an obligation to furnish the owner with design documents that meet this standard.

Privity of contract

Privity is a direct contractual relationship. There used to be a legal requirement, now virtually obsolete, that a party be in privity of contract with another party before the party could be held liable to that other party.

Foreseeable harm

If a party is negligent in the performance of its duties, it may be held liable to any party who suffered harm that was foreseeable at the time the duties were undertaken. Therefore, an engineer may be held liable to contractors or subcontractors despite the lack of privity of contract.

Limitation of liability

A contractual provision whereby the two parties to a contract agree to establish an upper limit of liability for certain specified shortcomings or breaches of contract. The clause cannot limit liability toward parties who did not sign the contract.

Construction monitoring

It is a general term referring to the services provided by the engineer to the project owner during the construction phase of the project. The specific scope of the engineer's responsibilities must be established in the owner-engineer agreement. The scope of responsibilities will determine the degree of liability exposure.

Agency

Agency is a legal relationship whereby one party gives another party authority to represent and act on behalf of the former party. An engineer is frequently the agent of the owner on a construction project. The owner is therefore bound by the actions of the engineer and the knowledge of the engineer is imputed to the owner.

Certification

It is a written statement that something has occurred. Engineers are frequently called upon to certify to the owner (and any other party that may foreseeably rely on the certification) that the contractor has achieved certain milestones in its performance of the construction work.

Collapsed As-Built

The collapsed as-built delay analysis methodology is a retrospective technique that begins with the as-built schedule and then subtracts activities representing delays or changes to demonstrate the effect on the completion date of a project but for the delay or change.

Generally, this method is applied in cases where reliable as-built schedule information exists, but baseline schedule and/or contemporaneous schedule updates either do not exist or are flawed to the extent that they are not reliable to support a delay analysis.

Implementation of the collapsed as-built delay analysis involves identifying project delays or changes, and then subtracting activities representing these delays or changes from the as-built construction schedule. The resulting "collapsed as-built" schedule demonstrates when a project would have been completed but for the delays or changes; demonstrating the effect of the delays or changes on a project's completion date.

Dispute Systems Design

Dispute systems design is a process for assisting an organization to develop a structure for handling a series of similar recurring or anticipated disputes (e.g., environmental enforcement cases or EEO complaints within a federal agency) more effectively.

Facilitation

Facilitation is a collaborative process in which a neutral seeks to assist a group of individuals or other parties to discuss constructively a number of complex, potentially controversial issues. The neutral in a facilitation process (the "facilitator") plays a less active role than a mediator and, unlike a mediator, does not see "resolution" of a conflict as a goal of his or her work.

Mediation

Mediation is a facilitated negotiation in which a skilled, impartial third party seeks to enhance negotiations between parties to a conflict or their representatives, by improving communication, identifying interests, and exploring possibilities for a mutually agreeable resolution.

The disputants remain responsible for negotiating the settlement, and the mediator lacks power to impose any solution; the mediator's role is to assist the process in ways acceptable to the parties. Typically this involves helping the disputants identify their interests, find areas of common ground and understand their alternatives, then suggesting possible solutions, and drafting a final settlement agreement.

A mediator's style may be described as "evaluative" or "facilitative." Most "evaluative" mediators emphasize helping the parties understand the strengths and weaknesses of their cases, and provide guidance as to the likely outcome in court and appropriate grounds for settling. "Facilitative" mediators tend to be less likely to provide direct advice, propose solutions, or predict outcomes; they usually seek to establish a framework that makes it safe for parties to communicate more effectively as to their interests, options, and realistic alternatives. In most situations, DOE utilizes facilitative mediation.

Neutral Evaluation

In neutral evaluation, a neutral - often someone with relevant legal, substantive, or technical expertise - hears informal presentations by the parties, offers them a non-binding oral or written evaluation of their cases' strengths and weaknesses and the likely reaction of a judge or jury if settlement is not reached, and provides his or her view of an appropriate range of outcomes.

He may also assist the parties to narrow areas of disagreement or identify relevant information that may enhance their chances of reaching settlement.

Arbitration

Arbitration is a process in which a third-party neutral (arbitrator), after reviewing evidence and listening to arguments from both sides, issues a decision "award" to resolve the case. In non-binding arbitration, the parties have agreed to consider the award. In binding arbitration, the parties agree in advance to be bound by the award. There are very limited grounds to appeal a binding arbitration award.

Binding arbitration is a statutorily-mandated feature of Federal labor management agreements. Consistent with statute, the parties to such agreements are free to negotiate the terms and conditions under which arbitrators are used to resolve disputes, including the procedures for their selection.

Mini-Trials

Mini-trials involve a structured settlement process in which attorneys for each side to a dispute present a summary of their case before the major decision makers. The rationale behind a minitrial is that if the decision makers are fully informed about the merits of their cases and that of the opposing parties, they will be better prepared to successfully engage in settlement discussions.

A neutral oversees the minitrial, and is responsible for explaining and maintaining an orderly process. When the case presentation is over, he will meet with the parties and assist in their settlement negotiations.

The minitrial method is a particularly efficient and cost effective means for settling large contract disputes and can be used in other cases where some or all of the following characteristics are present:

- (1) it is important to get facts and positions before high-level decision makers;
- (2) the parties are looking for a substantial level of control over the resolution of the dispute;

- (3) some or all of the issues are of a technical nature; and
- (4) a trial on the merits of the case would be very long and/or complex.

Peer Review Panel

A peer review panel is a problem-solving process where an employee takes a dispute to a group or panel of fellow employees and managers for a decision. The decision may or may not be binding on the employee and/or the employer, depending on the conditions of the particular process. If it is not binding on the employee, he or she would be able to seek relief in traditional forums for dispute resolution if dissatisfied with the decision under peer review.

The principle objective of the method is to resolve disputes early before they become formal complaints or grievances.

Typically, the panel is made up of employees and managers who volunteer for this duty and who are trained in listening, questioning, and problem-solving skills as well as the specific policies and guidelines of the panel. Peer review panels may be standing groups of individuals who are available to address whatever disputes employees might bring to the panel at any given time.

Other panels may be formed on an ad hoc basis through some selection process initiated by the employee, e.g., blind selection of a certain number of names from a pool of qualified employees and managers.

Ombuds

An ombuds is a neutral person who can assist in resolving work-related concerns in an informal, confidential, and impartial manner who rely on a number of techniques to resolve disputes. These techniques include counseling, mediating, conciliating, and fact finding. Usually, when an ombuds receives a complaint, he or she interviews parties, reviews files, and makes recommendations to the disputants.

Typically, ombuds do not impose solutions.

Ombuds may be used to handle employee workplace complaints and disputes or complaints and disputes from outside of the place of employment, such as those from customers or clients. Ombuds are often able to identify and track systemic problems and suggest ways of dealing with those problems.

Partnering

Partnering is a process used to facilitate contract performance. Using a trained facilitator to assist them, parties to a contract participate in a partnering workshop, where they work on identifying mutual interests, potential problems and techniques to resolve disputes.

After the workshop, all participants sign an agreement or “charter” which includes such things as performance goals, strategies for achieving these goals, organizational structure for the project, and a process for resolving disputes.

Based on open and continuous communication, mutual trust and respect, and the replacement of an “us vs. them” mentality with a joint problem solving approach, partnering has been shown to improve safety, reduce litigation and time delays and to promote creative solutions and pride in performance.

Glossary of key dispute resolution terms.

The glossary is designed to assist our clients and users of this publication in understanding the various, ‘terms of art’ extant in the field of conflict management. While the Glossary is relatively complete, it is not yet comprehensive.

If you have any questions or suggestions, please don’t hesitate to get in touch with one of MSI’s Directors.

Adjudication:

Any dispute resolution process in which a neutral third party hears each party's evidence and arguments and renders a decision that is binding on them. This decision is usually based on objective standards. The term adjudication can include arbitration and litigation.

ADR:

ADR stands for **Alternative Dispute Resolution**, although some authors have argued it really refers to Appropriate Dispute Resolution. ADR encompasses a wide range of mechanisms such as negotiation, fact-finding, mediation and arbitration, to name but a few, that are alternative to traditional litigation or adversarial adjudicative processes. ADR has been characterized as being a friendly, private, less costly and time saving series of methods of resolving individual and organizational conflict. Many ADR processes leave control of the process and of the outcome in the hands of the parties.

Arbitration:

A dispute resolution process where, in an informal hearing, a mutually acceptable neutral third party hears evidence and oral arguments and tenders a decision based on the merits. The process can be either voluntary, where the parties choose to submit their dispute to arbitration, or compulsory, where a contract, court, or statute

requires the submission. The decision reached by the arbitrator can be either binding or non-binding.

Conflict:

For the purposes of dispute resolution, conflict has been defined as the perception of incompatible interests. This definition encompasses the subjective perceptions of each of the disputants and acknowledges different underlying needs, concerns and values of the parties.

Conflict Analysis:

Stage during which data collected from interacting with the parties and other sources is synthesized and interpreted in an attempt to understand the elements of the dispute; people, dynamics, issues, and interests. The exercise is useful to negotiators and third parties such as mediators.

Conflict Management:

An approach to conflict whereby parties can develop protocols or arrangements for preventing disputes from occurring and pre-determine the range of appropriate responses to conflict should one arise. Conflict Management implies the ability to control a particular conflict or class of conflicts and the effects through either individual skill or institutional mechanisms. It combines conflict analysis with attempts to control the dynamics of the conflict to yield the most positive organizational and personal growth and change. This may involve the use of a variety of dispute processing and conflict resolution mechanisms.

Conflict Management System Design and Consultation:

Conflict management design extends and applies theory and best practice concepts to the specific area of organizational conflict. Conflict management design draws from the full range of OD theory and practice, particularly systems thinking, change intervention design, search processes, relationship building, strategic redesign and implementation, and action learning for improved conflict management systems development.

Conflict Prevention:

Study and practice of means by which to prevent the incompatibilities of interests and behavior that constitute conflict. In this sense, conflict refers to the broader state of incompatibility that may or may not give rise to a dispute. Conflict prevention is more narrowly focused than Conflict Management and often involves structural adjustments such as legislation (for example, no-fault laws) or generic solutions (such as clarification of company policy or gender-sensitivity training).

Conflict Resolution:

Study and practice of means by which to end the incompatibilities of interests and behavior that constitute conflict. In this sense, it refers to a professional field and academic discipline concerned with the nature of generic conflict (as opposed to a specific conflict) and with productive techniques to address conflict. Also, the term may be used to refer to an activity ("the parties are engaged in conflict resolution").

Court-Annexed Mediation:

This form of mediation exists where mediation services are incorporated into the court process and may either be ordered by the court or voluntarily agreed to by the parties. The parties maintain their rights to proceed to trial if mediation fails. For example, under Civil Rule 24.1 in Ontario, parties to a civil action must schedule mediation within 60 days of the filing of a statement of claim.

Dispute Management System (DMS):

Institutionalized framework of handling disputes within an organization. The design of a DMS involves examining the causes of disputing within an organization and then creating a process for constructively managing disputes as they arise. Also called Dispute Resolution System.

Dispute Resolution:

Study and practice of resolving disputes. Although the range of possible dispute-handling processes is quite broad, including war and avoidance, the field of dispute resolution is primarily focused on Alternative Dispute Resolution processes, especially mediation and arbitration.

Early Neutral Evaluation:

A non-binding process, typically required under the relevant rules of court, wherein the parties and their counsel meet shortly after the initiation of a court proceeding and confidentially present the factual and legal bases of their cases to each other and a third-party lawyer experienced in the substantive area.

The third party identifies issues, assesses the strengths of the cases, structures a plan for the progress of the case, and if requested by the parties, may encourage settlement.

Facilitation:

"Facilitation" is the use of a third party neutral to help multi-party work groups accomplish the content of their work by providing process leadership and process

expertise. *Facilitation and mediation are similar, but in the most elementary way, they are drastically different. Facilitation is primarily used pre-conflict or at least pre-crystallized conflict.*

Fact Finding:

Fact-finding is a form of inquisitive dispute resolution in which an investigation is conducted by an appointed neutral third party. Evidence supporting the positions of the parties is gathered with a view to identifying and focusing attention on the major issues in dispute and resolving differences as to the facts surrounding them.

The underlying objective of fact-finding is to generate insight into the opposing views on the issues in dispute. A determination is made as to what are the facts of the issues and the extent of the reasonableness of the parties' positions in relation to those facts.

A written report may be issued which typically is not binding on the disputants at this stage, but it may be used later in a different process such as arbitration. The written report may simply record the facts as found, or it may include recommendations for settlement.

The recommendations are non-binding; otherwise the process would be better called arbitration. This technique is very often used to investigate allegations harassment or discrimination.

Interest-based Negotiation:

It is an approach to negotiation that is characterized by a focus on underlying interests rather than positions. An interest is a need, desire, concern, want, or fear that motivates behaviour in negotiation. A position is a desired outcome in the negotiation. Behind every position taken in negotiation will be stated or underlying interests. Focusing on interests can open up opportunities for creative solutions.

Mediation:

Mediation has been defined as the use of a neutral third party to facilitate discussion about mutually acceptable options to resolve a dispute. There are many definitions of mediation but in the simplest form, mediation consists of assisted negotiation. The process can involve legal counsel. As in arbitration, the process can be court-annexed.

Negotiation:

Any discussions or dealings wherein parties with opposing interests seek to establish areas of agreement, settlement, or compromise so as to manage and ultimately

resolve their dispute. This does not include methods or resolution that entail arbitration or any judicial process. Negotiations can be principled. This occurs when the parties, rather than focusing on their "positions," deal with the underlying issues, seek to appreciate the needs of the other party, and try to achieve an agreement based on objective standards.

Ombudsperson:

An independent person or office that deals with complaints against perceived administrative, governmental, or organizational injustice. Typically Ombuds have the power to refer disputes to the appropriate process, investigate and occasionally to publicize and/or monitor trends. Ombuds also mediate and may make non-binding recommendations.

Ombuds may be characterized as organizational or traditional (i.e. the Ombudsman of Ontario) depending on the mandate and constituency served.

Partnering:

Partnering establishes working relationship through a mutually developed formal strategy of commitment and communication. Originally designed to facilitate efficient completion of large construction projects, Partnering refers to process, which allows a group of individual to meet and relate as equals in order to gain mutual understanding of roles a responsibilities and to buy in to common goals.

The facilitator moves the parties through a structured process to identify, examine and prioritize potential challenges and to jointly develop a preventive dispute resolution mechanism. Partnering does not change contractual agreements, but may result in a mutually agreed Charter or guideline of collaborative objectives that defines the parties' preferred working relationship.

Poisoned Work Environment:

A poisoned work environment refers to a workplace in which the behaviours of the people within the group negatively affect communication and productivity. A poisoned work environment may involve employees from any level, senior management to the front-line. From an organizational point of view, a poisoned work environment has systemic implications and may possibly include harassment or other kinds of vexatious behaviours.

Process Review:

An independent, impartial examination by a third party neutral of organizational practices and procedures according to a mandate prescribed by the retaining party. Most often results in a confidential written report, documenting practices, problem

areas and recommendations as requested. The goals of process review are client specific but often include quality assurance, risk management, and non-blame-laying analysis. The process may include review of documents, confidential interviewing of witnesses as well as application of best practices expertise and theory.

Incorporation by reference

It is a reference in an agreement to other documents which are not physically part of that agreement stating that the other documents are hereby incorporated into and made a part of the agreement. Documents that are incorporated by reference into an agreement become binding terms of that agreement.

Order of precedence

It is a statement in an agreement that in the event of internal contradictions in the agreement, certain documents or certain portions of the agreement shall take precedence over other portions of the agreement.

Contra proferentem

A latin phrase meaning “against the party who proffers a thing.” Any ambiguities in an agreement will be construed or interpreted against the party who drafted the agreement.

Implied warranty of the plans and specifications

The project owner impliedly warrants to the contractor that the plans and specifications are complete, accurate, and suitable for the intended purpose of the project.

Substantial completion

It is the point at which the project is sufficiently complete to be occupied by the owner and used for its intended purpose. Once a project is substantially complete, the contractor cannot be defaulted or held in breach of contract.

General business contracts terms and definitions glossary

Acceptance - the unconditional agreement to an **offer**. This creates the contract. Before acceptance, any offer can be withdrawn, but once accepted the contract is binding on both sides. Any **conditions** have the effect of a counter offer that must be accepted by the other party.

Agent - somebody appointed to act on behalf of another person (known as the principal). The amount of authority to deal that the agent has is subject to agreement between the principal and the agent. However, unless told otherwise, third parties can assume the agent has full powers to deal.

Arbitration - using an independent third party to settle disputes without going to court. The third party acting as arbitrator must be agreed by both sides. Contracts often include arbitration clauses nominating an arbitrator in advance.

Breach of contract - failure by one party to a contract to uphold their part of the deal. A breach of contract will make the whole contract void and can lead to damages being awarded against the party which is in breach.

Collective agreement - term used for agreements made between employees and employers, usually involving trade unions. They often cover more than one organization. Although these can be seen as contracts, they are governed by employment law, not contract law.

Comfort letters - documents issued to back up an agreement but which do not have any contractual standing. They are often issued by a parent or associate company stating that the group will back up the position of a small company to improve its trading position. They always state that they are not intended to be legally binding. Also known as **letters of comfort**.

Company seal - an embossing press used to indicate the official signature of a company when accompanied by the signatures of two officers of the company. Since 1989 it has been possible for a company to indicate its agreement without use of the seal, by two signatures (directors or company secretary) plus a formal declaration. However, some companies still prefer to use a seal and the articles of a company can override the law and require a seal to be used.

Conditions - major terms in a contract. Conditions are the basis of any contract and if one of them fails or is broken, the contract is breached. These are in contrast to **warranties**, the other type of contract term, which are less important and will not usually lead to the breach of the contract - but rather an adjustment in price or a payment of damages.

Confidentiality agreement - an agreement made to protect confidential information if it has to be disclosed to another party. This often happens during negotiations for a larger contract, when the parties may need to divulge information about their operations to each other. In this situation, the confidentiality agreement forms a binding contract not to pass on that information whether or not the actual contract is ever signed. Also known as a non-disclosure agreement.

Consideration - in a contract each side must give some consideration to the other. Often referred to as the quid pro quo - see the Latin terms below. Usually this is the price paid by one side and the goods supplied by the other. But it can be anything of value to the other party, and can be negative - eg someone promising not to exercise a right of access over somebody else's land in return for a payment would be a valid contract, even if there was no intention of ever using the right anyway.

Consumer - a person who buys goods or services but not as part of their business. A company can be a consumer for contracts not related to its business - especially for goods or services it buys for its employees. Charities are also treated as consumers.

Due diligence - the formal process of investigating the background of a business, either prior to buying it, or as another party in a major contract. It is used to ensure that there are no hidden details that could affect the deal.

Employment contract - a contract between an employer and an employee. This differs from other contracts in that it is governed by employment legislation - which takes precedence over normal contract law.

Exclusion clauses - clauses in a contract that are intended to exclude one party from liability if a stated circumstance happens. They are types of **exemption clauses**. The courts tend to interpret them strictly and, where possible, in favour of the party that did not write them. In customer dealings, exclusion clauses are governed by regulations that render most of them ineffective but note that these regulations do not cover you in business dealings.

Exemption clauses - clauses in a contract that try to restrict the liability of the party that writes them. These are split into **exclusion clauses** that try to exclude liability completely for specified outcomes, and limitation clauses that try to set a maximum on the amount of damages the party may have to pay if there is a failure of some part of the contract. Exemption clauses are regulated very strictly in consumer dealings but these don't apply for those who deal in the course of their business.

Express terms - the terms actually stated in the contract. These can be the written terms, or verbal ones agreed before or at the time the contract is made (see **implied terms**).

Franchising - commercial agreements that allow one business to deal in a product or service controlled by another. For example, most car manufacturers give franchises to sell their cars to local garages, who then operate using the manufacturer's brand.

Going concern - accounting idea that a business should be valued on the basis that it will be continuing to trade and able to use its assets for their intended purpose. The alternative is a break-up basis, which sets values according to what the assets could be sold for immediately - often much less than their value if they were kept in use.

Implied terms - are terms and clauses that are implied in a contract by law or custom and practice without actually being mentioned by any party. Terms implied by custom and practice can always be overridden by **express terms**, but some terms implied by law cannot be overridden, particularly those relating to consumers (see **exemption clauses**).

Incorporate - inclusion in, or adoption of, some term or condition as part of the contract. It differs from its company law definition where it refers to the legal act of creating a company.

Injunction - a remedy sometimes awarded by the court that stops some action being taken. It can be used to stop another party doing something against the terms of the contract. Injunctions are at the court's discretion and a judge may refuse to give one and award **damages** instead - see the finance contract terms below.

Joint and several liability - where parties act together in a contract as partners they have joint and several liability. In addition to all the partners being responsible together, each partner is also liable individually for the entire contract - so a creditor could recover a whole debt from any one of them individually, leaving that person to recover their shares from the rest of the partners.

Joint venture – It is an agreement between two or more independent businesses in a business enterprise, in which they will share the costs, management, profits or benefits arising from the venture. The exact shares and responsibilities will be set out in a Joint Venture Agreement.

Jurisdiction - a jurisdiction clause sets out the country or state whose laws will govern the contract and where any legal action must take place. Don't forget that England and Scotland have different legal codes, and this may need to be specified.

Letters of comfort - see **Comfort letters**.

Liability - a person or business deemed liable is subject to a legal obligation. A person/business who commits a wrong or breaks a contract or trust is said to be liable or responsible for it.

Limited liability - usually refers to limited companies where the owners' liability to pay the debts of the company is limited to the value of their shares. It can also apply to contracts where a valid limitation clause has been included in the terms.

Liquidation - the formal breaking up of a company or partnership by realising (selling or transferring to pay a debt) the assets of the business. This usually happens when the business is insolvent, but a solvent business can be liquidated if it no longer wishes to continue trading for whatever reason (see **receivership** in the financial terms below).

Misrepresentation - where one party to a contract makes a false statement of fact to the other which that other person relies on. Where there has been a misrepresentation then the party who received the false statement can get **damages** for their loss. The remedy of rescission (putting things back to how they were before the contract began) is sometimes available, but where it is not possible or too difficult the court can award damages instead.

Non-executive director - a director who does not work directly for a company but advises the other directors. Non-executive directors have the full powers and authority of any other director and can bind the company to any contract.

Offer - an offer to contract must be made with the intention to create, if accepted, a legal relationship. It must be capable of being accepted (not containing any impossible conditions), must also be complete (not requiring more information to define the offer) and not merely advertising.

Parent company - where one company owns more than 50 per cent of the voting rights of another company it is the parent of that company which in turn becomes its subsidiary. It can also occur where the parent has less than 50 per cent but can control the board of directors of the subsidiary: that is, it has the power to appoint and remove directors without referring to other shareholders.

Partnership - when two or more people or organizations join together to carry on a business.

Proxy - a person who acts on behalf of another for a specific purpose, or the form used to make such an appointment. In a company a shareholder can appoint a proxy to attend a meeting and vote on their behalf.

Quorum - the minimum number of people needed at a meeting for it to proceed and make any decisions.

Ratification - giving authority to an act that has already been done. A company general meeting resolution can ratify an act previously done by the directors; or a principal can choose to ratify the act of an **agent** that was beyond the specified power of the agent.

Registered Office - the official address of the company as stated on the register at Companies House. Any documents delivered to this address are considered to be legally served on the company.

Repudiation - has two meanings in contract law. The first is where a party refuses to comply with a contract and this amounts to a breach of contract. The second is where a contract was made by a minor (person under the age of 18) who then repudiates it at or shortly after the age of 18. Then the repudiation **voids** the contract rather than causing a **breach of contract**.

Restrictive covenant - is often included in long-term contracts and contracts of employment to stop the parties working with competitors during the period of the agreement and for some time thereafter. However, unless carefully written the courts will see them as being a restraint of trade and not enforce them.

Service contract - directors and officers of a company are usually given service contracts that are different to a contract of service or employment contract. This is because directors and officers are not always employees and the effect of employment law is different.

Shareholders' agreement - an agreement between all of the shareholders about how the company should be run and the application of the rights of the shareholders. This acts as a contract between the shareholders. The company itself is not bound by it, as it is not a party to the agreement.

Subject to contract - words used on documents exchanged by parties during contract negotiations. They denote that the document is not an offer or acceptance and negotiations are ongoing. Often the expression **without prejudice** is used when subject to contract is meant.

Trademark - a registered name or logo that is protected by law. Trademarks must be granted through the Patent Office.

Underwriter - a person who signs as party to a contract. Now usually only applied to insurance contracts where the underwriters are those who agree to bear all or part of the risk in return for the premium payments. Underwriters at Lloyd's of London are also known as names.

Unfair terms - some terms are made unfair by legislation and will not be enforced by the courts and may even be interpreted against the person who included them in the contract. The legislation mainly protects consumers, but can also apply where there is a business-to-business contract in which one party is significantly more powerful than the other.

Void - a void contract is one that cannot be performed or completed at all. A void contract is void from the beginning (ab initio - see the Latin terms below) and the normal remedy, if possible, is to put things back to where they were before the contract. Contracts are void where one party lacks the capacity to perform the contracted task, it is based on a mistake, or it is illegal.

Warranties - promises made in a contract, but which are less than a **condition**. Failure of a warranty results in liability to pay damages (see the financial terms below) but will not be a **breach of contract** unlike failure of a condition, which does breach the contract.

Without prejudice - a term used by solicitors in negotiations over disputes where an offer is made in an attempt to avoid going to court. *If the case does go to court no offer or facts stated to be without prejudice can be disclosed as evidence*. Often misused by businesses during negotiations when they actually mean **subject to contract**.



Financial contracts terms and definitions glossary

Note: terms highlighted in bold within the current definitions (eg **wound up**) are explained elsewhere in this guide.

Bankruptcy - the formal recognition that a person cannot pay their debts as they are due. Note this only applies to individuals, companies and partnerships that become insolvent are **wound up**.

Damages - money paid as the normal **remedy** in the law as compensation for an individual or company's loss. If another type of remedy is wanted (such as an **injunction** - see general contract terms below) but cannot be or is not given by the court, then damages will be awarded instead.

Debenture - a formal debt agreement. It refers to both the agreement and the document that verifies it. It is usually issued by companies and is generally supported by security over some property of the debtor. If the debtor defaults, the creditor can take and sell the property. Debentures are often transferable, so the creditor can sell it and there are markets on formal stock exchanges that deal in types of debenture. It is sometimes referred to as debenture stock. A mortgage is a type of debenture but one that is always secured, usually against land.

Floating charge - a form of security for a debt. Instead of naming a specific property, which can be taken by the creditor if the debtor defaults (as in a fixed charge like a mortgage), a class of goods or assets is named, such as the debtor's stock. This allows the debtor to trade in the assets freely, but if the debtor fails to make repayments then the floating charge becomes a fixed charge (known as crystallisation) over all the stock at that time. The creditor can then take and sell it to recover the debt.

Guarantee - a secondary agreement by which one person promises to honour the debt of another if that debtor fails to pay. Banks and other creditors often call on directors of small companies to give their personal guarantees for company debts. A guarantee must be in writing. The guarantor can only be sued if the actual debtor can't pay, in contrast to **indemnity**.

Indemnity - a promise by a third party to pay a debt owed, or repay a loss caused, by another party. Unlike a **guarantee**, the person owed can get the money direct from the indemnifier without having to chase the debtor first. Insurance contracts are contracts of indemnity: the insurance company pays first, and then tries to recover the loss from whoever caused it.

Insolvency - the situation where a person or business cannot pay its debts as they fall due (see **bankruptcy**, **liquidation** and **receivership**).

Liquidation - the formal breaking up of a company or partnership by realising (selling or transferring to pay a debt) the assets of the business. This usually happens when the business is insolvent, but a solvent business can be liquidated if it no longer wishes to continue trading for whatever reason (see **receivership**).

Receivership - the appointment of a licensed insolvency practitioner to take over the running of a company. A creditor with a secured debt appoints the receiver. The job of the receiver is to recover the debt either by taking the security and selling it or by running the business as a going concern until the debt is paid off (see **liquidation**).

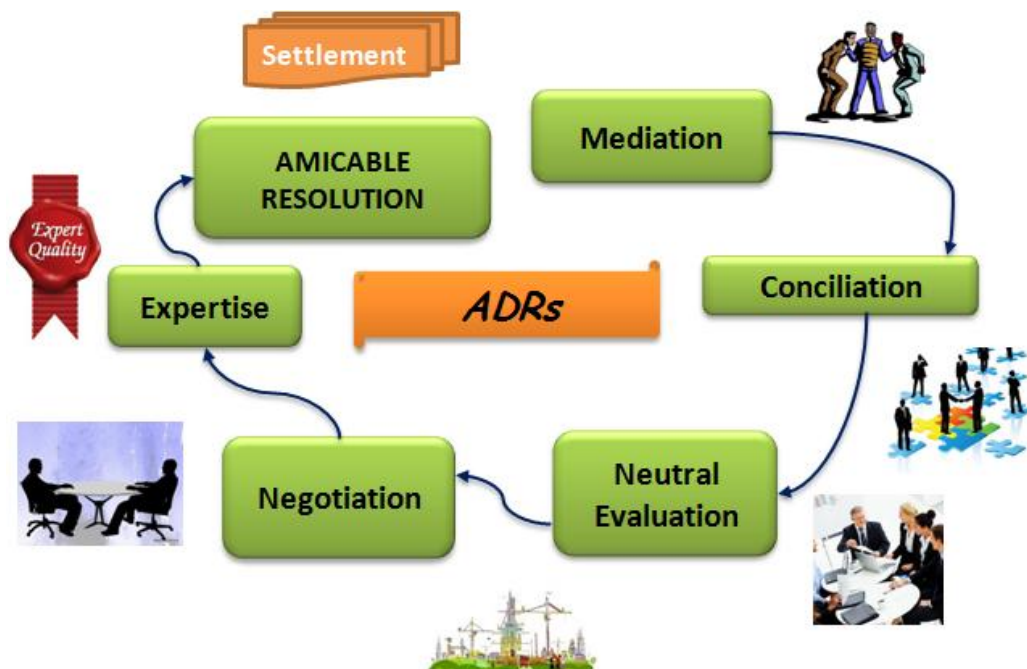
Redemption of shares - where a company issues shares on terms stating that they can be bought back by the company. Not all shares can be redeemed, only those stated to be

redeemable when they were issued. The payment for the shares must generally come from reserves of profit so that the capital of the company is preserved.

Remedy/Remedies - payments or actions ordered by the court as settlement of a dispute. The most common is **damages** (a payment of money). Others include specific performance (of an action required in the contract), **injunction** (see the general contract terms above) and rescission - putting things back to how they were before the contract was signed.

Stamp duty - a tax on transactions. Only applied to specific types of transactions eg dealings in land and buildings, shares and ships.

Wound up - winding-up is the formal procedure for disbanding a company.



Property contracts terms and definitions glossary

Note: terms highlighted in bold within the current definitions (eg **deed**) are explained elsewhere in this guide.

Break clause - a clause that allows a tenant to end a lease at specific times during the period of the lease.

Conveyance - a **deed** that conveys property rights.

Covenant - a promise within a contract for the performance or non-performance of a specified act.

Deed - a written document by which a person transfers ownership of real property to another. A deed must be properly executed and delivered in order to be effective.

Disclaimer - a written document denying legal responsibility, or a limitation of rights that might otherwise be claimed.

Easement - an interest in land owned by another that entitles its holder to a specific limited use or enjoyment eg the right to cross the land, or to continue to have an unobstructed view over it.

Encroachment - when a building or some portion of it, or a wall or fence, extends beyond the land of the owner and illegally intrudes upon that of an adjoining owner.

Equity - the monetary value of a property after any claims, such as a mortgage, are taken away.

Eviction - the dispossession of a tenant of leased property by force or through the legal process.

Exchange - the exchange of agreed, signed contracts. The transaction between the seller and the buyer is then legally binding, and completion (including the final transfer of money) usually takes place two to four weeks later.

Fixture - a permanently fixed piece of furniture or equipment incorporated into a property. Removing it would cause damage to buildings or land, and is therefore regarded as legally part of it.

Freehold - outright ownership of a property. This type of **tenure** contrasts with leasehold where the leaseholder has the rights to occupy a property for a specified period of time.

Habitable - suitable and fit for a person to live in and free of any faults that might endanger the health and safety of occupants.

Holdover Tenancy - a **tenancy** that arises when someone remains in possession of a property after the expiration of the previous tenancy and is recognised by the landlord by accepting rent.

Indenture - a deed or other document to which two or more parties are bound.

Invitee - a person, such as a customer, who is present in a place either by the express or the implied invitation of the occupier. This normally means that the occupier has to exercise reasonable care to protect the safety of the invited person.

Landlord - the owner of property that is leased or rented to others.

Lease - a contract by which an owner of property conveys exclusive possession and use of it for a specified rent and for a specified period - after which the property reverts to the owner.

Legal duty - the responsibility to others to act according to the law.

Loss of use - circumstances where a property cannot be occupied in the normal way, through the negligence or wrongdoing of another party.

Notice to quit - a notification or communication to a tenant to leave specified premises usually for a breach of terms of the lease.

Occupancy - holding, possessing, or occupying **premises**.

Occupant - someone who occupies a particular place.

Partition - the division into parts of property held jointly, or the sale of such property by a court with division of the proceeds.

Party wall - a wall that divides two separate premises, which is the joint responsibility of both owners.

Premises - a building or part of a building usually including the adjacent grounds.

Quit - for a tenant to move out of rented premises.

Reasonable wear and tear - damage sustained in the course of normal use.

Repossess - to take possession again of a property or goods after non-payment of money owed. This might follow a court order.

Search - an inspection carried out to establish whether any legal restraints, planning applications or aspects of legal ownership might affect the purchase of a property. Solicitors will look into land registry and local government records when pursuing this.

Sublease - a lease that is given by a tenant of part or all of the leased premises, to another person for a period shorter than the original lease, while still retaining some interest.

Tenancy - the temporary possession or **occupancy** of property that belongs to another. It also refers to the period of a tenant's possession.

Tenure - the way in which a property is held eg **freehold** tenure or leasehold tenure.

Trespass - a wilful act or active negligence that causes an injury to a person or the invasion of their property.

Vendee - the person to whom a property is sold.

Vendor - the person who is selling a property.

Latin contracts terms and definitions glossary

Note: terms highlighted in bold within the current definitions (eg **mala fides**) are explained elsewhere in this guide.

Ab initio (ab init) - from the beginning. Can mean that breaking some terms in a long-running contract results in the contract having been broken from the start.

Bona fide - in good faith. Usually implies an amount of trust that the parties are acting without any hidden motives. The opposite is **mala fides** - in bad faith.

Bona vacantia - vacant property. Refers to a situation where property or goods end up not being owned by anyone. This can happen if a person dies without heirs or a company is struck off without all its property being distributed. It can also occur where a contract becomes void and property under it cannot be restored to an owner. In the UK, any such property then belongs to the Crown and expensive proceedings are required to get it back.

Caveat emptor - buyer beware. This is a general rule that it is up to the buyer to find out if what they are buying is what they want. Consumer regulations require certain information to be disclosed to consumers and insurance contracts are covered by the **uberrimae fides** - but many types of business contracts are covered by the caveat emptor rule.

Consensus ad idem - agreement on an idea. This is the concept that the parties to the contract must all be in agreement on the basis of the contract. If it is discovered that the parties were thinking different things, then there is no consensus and the contract is void.

De facto - in fact. The opposite of **de jure** (in law). Having a practical effect different from the legally accepted or expected situation. For example, a person who deliberately or negligently gives the impression to another party of being a company director, can be treated as a de facto director. So any agreement or statements will bind the company they make as if a properly appointed director made them.

De jure - in law. According to law, the opposite of **de facto**.

De minimis - short for de minimis non curat lex: the law does not concern itself with trifles. It basically means insignificant or too small to bother with.

De novo - start afresh. Starting a new contract on the same basis as the old.

Exempli gratia (eg) - for example. One or more examples from a greater list of possibilities. Compares with **id est (ie)**, that is, which indicates a full, definitive list of all possibilities.

Ex gratia - out of grace. A gift made without any obligation on the part of the giver or any return from the receiver.

Ex parte - on behalf of. An action, usually a legal action, taken by a party on someone else's behalf.

Ex post facto - because of some later event. Where a later event or occurrence interferes with an earlier agreement.

Id est (ie) - that is. Is followed by a definition or list of items or options that relate to a preceding statement or condition. Differs from **exempli gratia (eg)** - for example - that gives some, but not all, examples of the items or options.

Inter alia - among other things. This is often used in contracts to indicate that what is being specifically referred to is part of a larger group without having to name all the elements.

Mala fides - bad faith, opposite of **bona fide**.

Nemo dat quod non habet - no one can give what they do not have. The principle that a seller cannot pass on a better right to the property than they actually have. So, if goods are stolen, the buyer does not get ownership even if there was no indication that they were stolen.

Non compos mentis - not of sound mind. A person who is not of sound mind will not have full capacity to enter into a contract.

Non est factum - not my act. This is a denial by a person that they were actually involved in some action or dealings. In a contract, it can occur if a party denies that they signed the contract - that someone else forged their signature.

Pari passu - equal and even. This relates to shares to denote that newly issued shares have the same rights and restrictions as those of the same class already existing.

Prima facie - at first sight. A prima facie fact is one that seems to be correct, but may subsequently be proved wrong by other evidence.

Pro rata - for the rate. Divided in proportion to some existing split. For example, a pro rata share issue is offered in proportion to the number of shares each shareholder already has.

Pro tanto - for so much. Means to the extent specified, but not more.

Pro tempore (pro tem) - for the time being.

Quid pro quo - something for something. The usual definition of **consideration** (see the general contracts terms above) in a contract, on the basis that each party should offer something to the other.

Uberrima fides - utmost good faith. The concept that a party to certain types of contract must act in good faith and declare all relevant facts to the other side even if they do not ask. This only usually applies to insurance contracts where the insured person must declare all known risks. It is an exemption to the general contract rule of **caveat emptor**.

Internet Links to useful information II

Sustainable project guide

<https://app.box.com/s/2pp8dnz6kbcilp2ksiir>

Standard form of agreement between owner and Program Manager

<https://app.box.com/s/zwcqxmzkemh1dz3a8ige>

Standard form of agreement between owner and Design Manager

<https://app.box.com/s/hfbj4v359spta1i2z4sx>

Mediator Qualification Criteria

<https://app.box.com/s/av8ekl7hmnz773yv2sdu>

International Conflict Management Strategy

<https://app.box.com/s/xfv66gtzkzpiublhummf>

Guide for drafting international Dispute Resolution Clauses

<https://app.box.com/s/rp3nm4jueybhed86030o>

Construction Law Primer

<https://app.box.com/s/ljvseijd07zbxxm1mqvt>

Complex Construction Arbitrator Criteria

<https://app.box.com/s/ldfkjc8wl35h8htotm1u>

120 minutes crash course on projects construction law and others

<https://app.box.com/s/g7q8q629ld7t0kpbrs94>

Minitrial

<https://app.box.com/s/r82wavwv9ub7x9epslfh>

Principles for ADR provider organizations

<https://app.box.com/s/li9nwtxefc0etpkqtamz>

CPR Construction Partnering Briefing

<https://app.box.com/s/20ydlqbzi9o4mohe27se>

CPR Protocol on determination of Damages in Arbitration

<https://app.box.com/s/ji3lzd0dm76ybeojk0xs>

Global Rules for Accelerated Commercial Arbitration

<https://app.box.com/s/09zzqtpt4xw6b9p2gpam>

Mediation Procedure

<https://app.box.com/s/jxeeynxsjdj0mfbrp3ih>

Mediators, Arbitrators and everything ADR

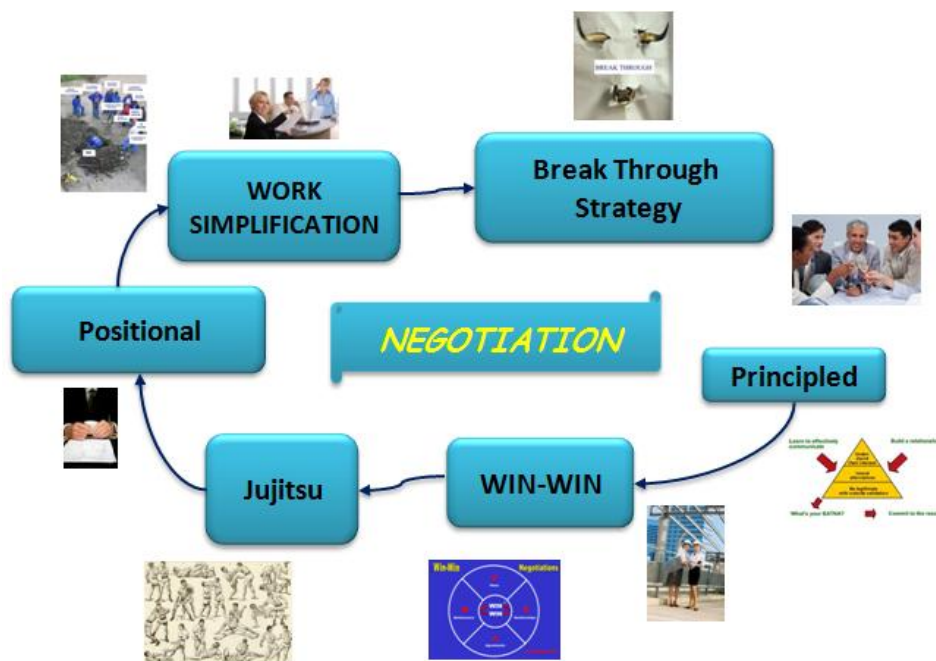
<http://www.mediate.com>

International Center for Dispute Resolution

<http://www.icdr.org>

Singapore International Arbitration Center

<http://www.siac.org.sg/>



The Necessary Art of Persuasion

by Jay Conger

If there ever was a time for businesspeople to learn the fine art of persuasion, it is now. Gone are the command-and-control days of executives managing by decree.

Today businesses are run largely by cross-functional teams of peers and populated by baby boomers and their Generation X offspring, who show little tolerance for unquestioned authority.

Electronic communication and globalization have further eroded the traditional hierarchy, as ideas and people flow more freely than ever around organizations and as decisions get made closer to the markets. These fundamental changes, more than a decade in the making, but now firmly part of the economic landscape, essentially come down to this:

Work today gets done in an environment where people don't just ask What should I do? but Why should I do it?

Answering this *why question* effectively means persuading.

Yet many businesspeople misunderstand persuasion, and more still underutilize it.

The reason?

Persuasion is widely perceived as a skill reserved for selling products and closing deals.

It is also commonly seen as just another form of manipulation—devious and to be avoided.

Certainly, persuasion can be used in selling and deal-clinching situations, and it can be misused to manipulate people. But exercised constructively and to its full potential, persuasion supersedes sales and is quite the opposite of deception.

Effective persuasion becomes a negotiating and learning process through which a persuader leads colleagues to a problem's shared solution.

Persuasion does indeed involve moving people to a position they don't currently hold, but not by begging or cajoling.

Instead, it involves careful preparation, the proper framing of arguments, the presentation of vivid supporting evidence, and the effort to find the correct emotional match with your audience.

Effective persuasion is a difficult and time-consuming proposition, but it may also be more powerful than the command-and-control managerial model it succeeds.

As *AlliedSignal's* CEO Lawrence Bossidy said recently,

“The day when you could yell and scream and beat people into good performance is over.

Today you have to appeal to them by helping them see how they can get from here to there, by establishing some credibility, and by giving them some reason and help to get there. Do all those things, and they'll knock down doors.”

In essence, he is describing persuasion—now more than ever, the language of business leadership.

Think for a moment of your definition of persuasion. If you are like most businesspeople I have encountered you see persuasion as a relatively straightforward process.

First, you strongly state your position.

Second, you outline the supporting arguments, followed by a highly assertive, data-based exposition.

Finally, you enter the deal-making stage and work toward a “close.”

In other words, you use logic, persistence, and personal enthusiasm to get others to buy a good idea.

***The reality is that following this process is one sure straight way
to fail at persuasion.***

What, then, constitutes effective persuasion?

If persuasion is a learning and negotiating process, then in the most general terms it involves phases of discovery, preparation, and dialogue.

Getting ready to persuade colleagues can take weeks or months of planning as you learn about your audience and the position you intend to argue.

Before they even start to talk, effective persuaders have considered their positions from every angle. What investments in time and money will my position require from others? Is my supporting evidence weak in any way? Are there alternative positions I need to examine?

Dialogue happens before and during the persuasion process.

Before the process begins, effective persuaders use dialogue to learn more about their audience's opinions, concerns, and perspectives.

During the process, dialogue continues to be a form of learning, but it is also the beginning of the negotiation stage. You invite people to discuss, even debate, the merits of your position, and then to offer honest feedback and suggest alternative solutions.

That may sound like a slow way to achieve your goal, but effective persuasion is about testing and revising ideas in concert with your colleagues' concerns and needs.

In fact, the best persuaders not only listen to others, but also incorporate their perspectives into a shared solution.

Persuasion, in other words, often involves—indeed, demands—compromise.

Perhaps that is why the most effective persuaders seem to share a common trait: they are open-minded, never dogmatic. They enter the persuasion process prepared to adjust their viewpoints and incorporate others' ideas.

This approach to persuasion is, interestingly, highly persuasive in itself.

When colleagues see that a persuader is eager to hear their views and willing to make changes in response to their needs and concerns, they respond very positively. They trust the persuader more and listen more attentively. They don't fear being bowled over or manipulated.

They see the persuader as flexible and are thus more willing to make sacrifices themselves. Because that is such a powerful dynamic, good persuaders often enter the persuasion process with judicious compromises already prepared.

Four Essential Steps to Effective Persuasion

Effective persuasion involves four distinct and essential steps.

First, effective persuaders establish credibility.

Second, they frame their goals in a way that identifies common ground with those they intend to persuade.

Third, they reinforce their positions using vivid language and compelling evidence, and

Fourth, they connect emotionally with their audience.

As one of the most effective executives in our research commented, "The most valuable lesson I've learned about persuasion over the years is that there's just as much strategy in how you present your position as in the position itself.

In fact, I'd say the strategy of presentation is the more critical."

Establish credibility

The first hurdle persuaders must overcome is their own credibility.

A persuader can't advocate a new or contrarian position without having people wonder,

Can we trust this individual's perspectives and opinions?

Such a reaction is understandable. After all, allowing oneself to be persuaded is risky, because any new initiative demands a commitment of time and resources.

Yet even though persuaders must have high credibility, our research strongly suggests that most managers overestimate their own credibility—considerably.

In the workplace, credibility grows out of two sources: *expertise and relationships*.

People are considered to have high levels of expertise if they have a history of sound judgment or have proven themselves knowledgeable and well informed about their proposals. For example, in proposing a new product idea, an effective persuader would need to be perceived as possessing a thorough understanding of the product—its specifications, target markets, customers, and competing products and projects. A history of prior successes would further strengthen the persuader's perceived expertise.

One extremely successful executive in our research had a track record of 14 years of running highly effective project teams. Not surprisingly, he had an easy time winning colleagues over to his position. Another manager had a track record of seven successful construction claims in a period of five years. He, too, had an advantage when it came to persuading his colleagues to support his next new idea.

On the relationship side, people with high credibility have demonstrated—again, usually over time—that they can be trusted to listen and to work in the best interests of others.

They have also consistently shown strong emotional character and integrity; that is, they are not known for mood extremes or inconsistent performance. Indeed, people who are known to be honest, steady, and reliable have an edge when going into any persuasion situation.

Because their relationships are robust, they are more apt to be given the benefit of the doubt. One effective persuader in our research was considered by colleagues to be remarkably trustworthy and fair; many people confided in her. In addition, she generously shared credit for good ideas and provided staff with exposure to the company's senior executives.

This woman had built strong relationships, which meant her staff and peers were always willing to consider seriously what she proposed.

If expertise and relationships determine credibility, it is crucial that you undertake an honest assessment of where you stand on both criteria before beginning to persuade.

To do so, first step back and ask yourself the following questions related to expertise:

How will others perceive my knowledge about the strategy, product, or change I am proposing?

Do I have a track record in this area that others know about and respect?

Then, to assess the strength of your relationship credibility, ask yourself,

Do those I am hoping to persuade see me as helpful, trustworthy, and supportive?

Will they see me as someone in sync with them—emotionally, intellectually, and politically—on issues like this one?

Finally, it is important to note that it is not enough to get your own read on these matters. You must also test your answers with colleagues you trust to give you a reality check. Only then will you have a complete picture of your credibility.

In most cases, that exercise helps people discover that they have some measure of weakness, either on the expertise or on the relationship side of credibility. The challenge then becomes to fill in such gaps.

In general, if your area of weakness is on the expertise side, you have several options:

- First, you can learn more about the complexities of your position through either formal or informal education and through conversations with knowledgeable individuals. You might also get more relevant experience on the job by asking, for instance, to be assigned to a team that would increase your insight into particular markets or products;
- Another alternative is to hire someone to bolster your expertise—for example, an industry consultant or a recognized outside expert, such as a professor. Either one may have the knowledge and experience required to support your position effectively. Similarly, you may tap experts within your organization to advocate your position. Their credibility becomes a substitute for your own;
- You can also utilize other outside sources of information to support your position, such as respected business or trade periodicals, books, independently produced reports, and lectures by experts. In our research, one executive from the clothing industry successfully persuaded his company to reposition an entire product line to a more youthful market after bolstering his credibility with articles by a noted demographer in two highly regarded journals and with two independent market-research studies; and
- Finally, you may launch pilot projects to demonstrate on a small scale your expertise and the value of your ideas.

As for filling in the relationship gap:

- You should make a concerted effort to meet one-on-one with all the key people you plan to persuade. This is not the time to outline your position, but rather to get a range of perspectives on the issue at hand. If you have the time and resources, you should even offer to help these people with issues that concern them; and
- Another option is to involve like-minded co-workers who already have strong relationships with your audience. Again, that is a matter of seeking out substitutes on your own behalf.

For an example of how these strategies can be put to work, consider the case of a senior project manager of a large construction company, whom we will call Jim Pers.

Although he was new to his job, Pers ardently wanted to persuade the senior management team that the company was in serious trouble. He believed that the overhead was excessive and would jeopardize its position as the industry entered a more competitive era. Most of his colleagues, however, did not see the potential seriousness of the situation.

Because the company had been enormously successful in recent years, they believed changes in the industry posed little danger. In addition to being newly appointed, Pers had another problem: his career had been in projects operation services, and he was considered an outsider in the world of project management. Thus, he had few personal connections to draw on as he made his case, nor was he perceived to be particularly knowledgeable about project exigencies.

As a first step in establishing credibility, Pers hired an external consultant with respected credentials in the industry who showed that the company was indeed poorly positioned to be a low-cost service provider.

In a series of interactive presentations to the top-level management, the consultant revealed how the company's leading competitors were taking aggressive actions to contain operating costs.

He made it clear from these presentations that not cutting costs would soon cause the company to fall drastically behind the competition. These findings were then distributed in written reports that circulated throughout.

Next, Pers determined that the company's project managers were critical to his campaign. The buy-in of those respected and informed individuals would signal to others in the company that his concerns were valid. Moreover, Pers looked to the project managers because he believed that they could increase his expertise about project management trends and also help him test his own assumptions.

Thus, for the next three months, he visited every project in his region of Andalusia, Spain, 135 in all. During each visit, he spent time with project managers, listening to their perceptions of the company's strengths and weaknesses. He learned firsthand about the competition's initiatives and customer trends, and he solicited ideas for improving the services and minimizing costs.

By the time he was through, Pers had a broad perspective on the company's future that few people even in senior management possessed. And he had built dozens of relationships in the process.

Finally, Pers launched some small, but highly visible initiatives to demonstrate his expertise and capabilities. For example, he was concerned about slow success in the company's change orders negotiation and the contract managers' resulting slip in morale.

So he devised a program in which new change orders negotiation would be supported by corporate resources. The initiative proved remarkably successful, and in short order Pers appeared to be a far more savvy project manager than anyone had assumed.

Credibility is the cornerstone of effective persuading; without it, a persuader won't be given the time of day. In the best-case scenario, people enter into a persuasion situation with some measure of expertise and relationship credibility. But it is important to note that credibility along either lines can be built or bought. Indeed, it must be, or the next steps are an exercise in futility.

Frame for common ground

Even if your credibility is high, your position must still appeal strongly to the people you are trying to persuade. After all, few people will jump on board a train that will bring them to ruin or even mild discomfort.

Effective persuaders must be adept at describing their positions in terms that illuminate their advantages.

As any parent can tell you, the fastest way to get a child to come along willingly on a trip to the grocery store is to point out that there are lollipops by the cash register.

That is not deception.

It is just a persuasive way of framing the benefits of taking such a journey.

In work situations, persuasive framing is obviously more complex, but the underlying principle is the same. ***It is a process of identifying shared benefits.***

Paula Man, a project management consultant for a large consulting company, offers a good example of persuasive framing. Her client, a large oil and gas company holding more than 700 projects at all times which is normal for this kind of industry, but most projects missed the deadlines and ended up blowing the budget on worrying percentages.

A two month analysis of the situation clearly showed a pattern of lack of coordination, cooperation, communication and management knowledge that clearly indicated what the solution should be, “Persuade the project team to overcome all these problems by using PMI recommended practices as clearly explained on the Operational Project Management Maturity Model (OPM3) guidelines”.

The strategy made sense to corporate headquarters. Its research showed that project owners thought the company’s success was less than the competition’s, and the company was anxious to overcome this perception.

The franchisees, on the other hand, were still experiencing strong results and were far more concerned about the short-term impact that the new approach would have on their profit margins.

A less experienced persuader would have attempted to rationalize headquarters’ perspective to the franchisees—to convince them of its validity. But Man framed the change in management style to demonstrate its benefits to the franchisees themselves. The new value campaign, she explained, would actually improve franchisees’ profits. To back up this point, she drew on several sources.

A pilot project in Qatar, for instance, had demonstrated that under the new management scheme, the most profitable items on the companies —had markedly increased.

She had estimated that the new management plan would increase value perceptions by 100%, with the result that franchisee sales could be expected to grow at 10% yearly.

Man closed her presentation with a letter written many years before by the company’s founder to the organization. It was an emotional letter extolling the values of the company and stressing the importance of the franchisees to the company’s success. It also highlighted the importance of the company’s position as the timely performer, low-price, quality leader in the industry.

The beliefs and values contained in the letter had long been etched in the minds of Man’s audience.

Hearing them again only confirmed the company’s concern for the franchisees and the importance of their winning formula. They also won Man a standing ovation. That day, the franchisees voted unanimously to support the new management plan.

The Man case illustrates why—in choosing appropriate positioning—it is critical first ***to identify your objective’s tangible benefits to the people you are trying to persuade.***

Sometimes that is easy. Mutual benefits exist. In other situations, however, no shared advantages are readily apparent—or meaningful. In these cases, effective persuaders adjust

their positions. They know it is impossible to engage people and gain commitment to ideas or plans without highlighting the advantages to all the parties involved.

At the heart of framing is a solid understanding of your audience. Even before starting to persuade, the best persuaders we have encountered closely study the issues that matter to their colleagues. They use conversations, meetings, and other forms of dialogue to collect essential information. They are good at listening. They test their ideas with trusted confidants, and they ask questions of the people they will later be persuading.

Those steps help them think through the arguments, the evidence, and the perspectives they will present. Often, this process causes them to alter or compromise their own plans before they even start persuading.

It is through this thoughtful, inquisitive approach they develop frames that appeal to their audience.

Consider the case of a manager who was in charge of process engineering for a jet engine manufacturer. He had redesigned the work flow for routine turbine maintenance for airline clients in a manner that would dramatically shorten the turnaround time for servicing. Before presenting his ideas to the company's president, he consulted a good friend in the company, the vice president of engineering, who knew the president well.

This conversation revealed that the president's prime concern would not be speed or efficiency, but profitability. To get the president's buy-in, the vice president explained, the new system would have to improve the company's profitability in the short run by lowering operating expenses.



At first this information had the manager stumped. He had planned to focus on efficiency and had even intended to request additional funding to make the process work. But his conversation with the vice president sparked him to change his position.

Indeed, he went so far as to change the workflow design itself so that it no longer required new investment, but rather drove down costs. He then carefully documented the cost savings and profitability gains that his new plan would produce and presented this revised plan to the president. With his initiative positioned anew, the manager persuaded the president and got the project approved.

Provide evidence

With credibility established and a common frame identified, persuasion becomes a matter of presenting evidence. Ordinary evidence, however, won't do. We have found that the most effective persuaders use language in a particular way.

They supplement numerical data with examples, stories, metaphors, and analogies to make their positions come alive.

That use of language paints a vivid word picture and, in doing so, lends a compelling and tangible quality to the persuader's point of view.

Think about a typical persuasion situation. The persuader is often advocating a goal, strategy, or initiative with an uncertain outcome. Karen Fries and Barry Linnett, for instance, wanted Microsoft to invest millions of dollars in a software package with chancy technology and unknown market demand.

The team could have supported its case solely with market research, financial projections, and the like. But that would have been a mistake, because research shows that most people perceive such reports as not entirely informative. They are too abstract to be completely meaningful or memorable.

In essence, numbers don't make an emotional impact.

By contrast, stories and vivid language do, particularly when they present comparable situations to the one under discussion. A marketing manager trying to persuade senior executives to invest in a new product, for example, might cite examples of similar investments that paid off handsomely. Indeed, we found that people readily draw lessons from such cases.

More important, the research shows that listeners absorb information in proportion to its vividness. Thus it is no wonder that Fries and Linnett hit a home run when they presented their case with the following analogy:

Imagine you want to cook dinner and you must first go to the supermarket. You have all the flexibility you want—you can cook anything in the world as long as you know how and have the time and desire to do it. When you arrive at the supermarket, you find all these overstuffed aisles with cryptic single-word headings like “sundries” and “ethnic food” and “condiments.”

These are the menus on typical computer interfaces. The question is whether salt is under condiments or ethnic food or near the potato chip section.

There are surrounding racks and wall spaces, much as our software interfaces now have support buttons, tool bars, and lines around the perimeters. Now after you have collected everything, you still need to put it all together in the correct order to make a meal. If you're a good cook, your meal will probably be good. If you're a novice, it probably won't be.

We, at Microsoft, have been selling under the supermarket category for years, and we think there is a big opportunity for restaurants. That's what we are trying to do now: pushing the next step with software that is more like going to a restaurant, so the user doesn't spend all of his time searching for the ingredients.

We find and put the ingredients together. You sit down, you get comfortable. We bring you a menu. We do the work, you relax. It's an enjoyable experience. No walking around lost trying to find things, no cooking.

Had Fries and Linnett used a literal description of advantages, few of their highly computer-literate colleagues at Microsoft would have personally related to the menu-searching frustration that was designed to eliminate. The analogy they selected, however, made purpose both concrete and memorable.

A master persuader, Mary Kay Ash, the founder of Mary Kay Cosmetics, regularly draws on analogies to illustrate and "sell" the business conduct she values. Consider this speech at the company's annual sales convention:

Back in the days of the Roman Empire, the legions of the emperor conquered the known world. There was, however, one band of people that the Romans never conquered. Those people were the followers of the great teacher from Bethlehem. Historians have long since discovered that one of the reasons for the sturdiness of this folk was their habit of meeting together weekly.

They shared their difficulties, and they stood side by side. Does this remind you of something?

The way we stand side by side and share our knowledge and difficulties with each other in our weekly unit meetings?

I have so often observed when a director or unit member is confronted with a personal problem that the unit stands together in helping that sister in distress. What a wonderful circle of friendships we have. Perhaps it's one of the greatest fringe benefits of our company.

Through her vivid analogy, Ash links collective support in the company to a courageous period in Christian history. In doing so, she accomplishes several objectives. First, she drives home her belief that collective support is crucial to the success of the organization. Most Mary Kay salespeople are independent operators who face the daily challenges of direct selling.

An emotional support system of fellow salespeople is essential to ensure that self-esteem and confidence remain intact in the face of rejection. Next she suggests by her analogy that solidarity against the odds is the best way to stymie powerful oppressors—to wit, the competition. Finally, Ash's choice of analogy instills a sense of a heroic mission to the work of her sales force.

You probably don't need to invoke the analogy of the Christian struggle to support your position, but effective persuaders are not afraid of unleashing the immense power of language. In fact, they use it to their utmost advantage.

Connect emotionally

In the business world, we like to think that our colleagues use reason to make their decisions, yet if we scratch below the surface we will always find emotions at play. Good persuaders are aware of the primacy of emotions and are responsive to them in two important ways. First, they show their own emotional commitment to the position they are advocating.

Such expression is a delicate matter. If you act too emotional, people may doubt your clear headedness. But you must also show that your commitment to a goal is not just in your mind but in your heart and gut as well. Without this demonstration of feeling, people may wonder if you actually believe in the position you're championing.

Perhaps more important, however, is that effective persuaders have a strong and accurate sense of their audience's emotional state, and they adjust the tone of their arguments accordingly. Sometimes that means coming on strong, with forceful points. Other times, a whisper may be all that is required. The idea is that whatever your position, you match your emotional fervor to your audience's ability to receive the message.

Effective persuaders seem to have a second sense about how their colleagues have interpreted past events in the organization and how they will probably interpret a proposal. The best persuaders in our study would usually canvass key individuals who had a good pulse on the mood and emotional expectations of those about to be persuaded.

They would ask those individuals how various proposals might affect colleagues on an emotional level—in essence, testing possible reactions. They were also quite effective at gathering information through informal conversations in the hallways or at lunch. In the end, their aim was to ensure that the emotional appeal behind their persuasion matched what their audience was already feeling or expecting.

To illustrate the importance of emotional matchmaking in persuasion, consider this example. The president of an aeronautics manufacturing company strongly believed that the maintenance costs and turnaround time of the company's U.S. and foreign competitors were so much better than his own company's that it stood to lose customers and profits.

He wanted to communicate his fear and his urgent desire for change to his senior managers. So one afternoon, he called them into the boardroom. On an overhead screen was the projected image of a smiling man flying an old-fashioned biplane with his scarf blowing in the wind. The right half of the transparency was covered. When everyone was seated, the president explained that he felt as this pilot did, given the company's recent good fortune.

The organization, after all, had just finished its most successful year in history. But then with a deep sigh, he announced that his happiness was quickly vanishing. As the president lifted the remaining portion of the sheet, he revealed an image of the pilot flying directly into a wall. The president then faced his audience and in a heavy voice said, "This is what I see happening to us." He asserted that the company was headed for a crash if people didn't take action fast. He then went on to lecture the group about the steps needed to counter this threat.

The reaction from the group was immediate and negative. Directly after the meeting, managers gathered in small clusters in the hallways to talk about the president's "scare tactics." They resented what they perceived to be the president's overstatement of the case. As the managers saw it, they had exerted enormous effort that year to break the company's records in sales and profitability.

They were proud of their achievements. In fact, they had entered the meeting expecting it would be the moment of recognition. But to their absolute surprise, they were scolded.

The president's mistake? First, he should have canvassed a few members of his senior team to ascertain the emotional state of the group. From that, he would have learned that they were in need of thanks and recognition. He should then have held a separate session devoted simply to praising the team's accomplishments.

Later, in a second meeting, he could have expressed his own anxieties about the coming year. And rather than blame the team for ignoring the future, he could have calmly described what he saw as emerging threats to the company and then asked his management team to help him develop new initiatives.

Now let us look at someone who found the right emotional match with his audience: Robert Marcell, head of Chrysler's small-car design team. In the early 1990s, Chrysler was eager to produce a new subcompact—indeed, the company had not introduced a new model of this type since 1978. But senior managers at Chrysler did not want to go it alone. They thought an alliance with a foreign manufacturer would improve the car's design and protect Chrysler's cash stores.

Marcell was convinced otherwise. He believed that the company should bring the design and production of a new subcompact in-house. He knew that persuading senior managers would be difficult, but he also had his own team to contend with. Team members had lost their confidence that they would ever again have the opportunity to create a good car. They were also angry that the United States had once again given up its position to foreign competitors when it came to small cars.

Marcell decided that his persuasion tactics had to be built around emotional themes that would touch his audience. From innumerable conversations around the company, he learned that many people felt as he did—that to surrender the subcompact's design to a foreign manufacturer was to surrender the company's soul and, ultimately, its ability to provide jobs. In addition, he felt deeply that his organization was a talented group hungry for a challenge and an opportunity to restore its self-esteem and pride. He would need to demonstrate his faith in the team's abilities.

Marcell prepared a 15-minute talk built around slides of his hometown, Iron River, a now defunct mining town in Upper Michigan, devastated, in large part, by foreign mining companies. On the screen flashed recent photographs he had taken of his boarded-up high school, the shuttered homes of his childhood friends, the crumbling ruins of the town's ironworks, closed churches, and an abandoned railroad yard.

After a description of each of these places, he said the phrase, "We couldn't compete"—like the refrain of a hymn. Marcell's point was that the same outcome awaited Detroit if the production of small cars was not brought back to the United States. Surrender was the enemy, he said, and devastation would follow if the group did not take immediate action.

Marcell ended his slide show on a hopeful note. He spoke of his pride in his design group and then challenged the team to build a "made-in-America" subcompact that would prove that the United States could still compete.

The speech, which echoed the exact sentiments of the audience, rekindled the group's fighting spirit. Shortly after the speech, group members began drafting their ideas for a new car.

Marcell then took his slide show to the company's senior management and ultimately to Chrysler chairman Lee Iacocca. As Marcell showed his slides, he could see that Iacocca was touched. Iacocca, after all, was a fighter and a strongly patriotic man himself. In fact, Marcell's approach was not too different from Iacocca's earlier appeal to the United States Congress to save Chrysler.

At the end of the show, Marcell stopped and said, "If we dare to be different, we could be the reason the U.S. auto industry survives. We could be the reason our kids and grandkids don't end up working at fast-food chains." Iacocca stayed on for two hours as Marcell explained in greater detail what his team was planning. Afterward, Iacocca changed his mind and gave Marcell's group approval to develop a car, the Neon.

With both groups, Marcell skillfully matched his emotional tenor to that of the group he was addressing. The ideas he conveyed resonated deeply with his largely Midwestern audience. And rather than leave them in a depressed state, he offered them hope, which was more persuasive than promising doom. Again, this played to the strong patriotic sentiments of his American-heartland audience.

No effort to persuade can succeed without emotion, but showing too much emotion can be as unproductive as showing too little. The important point to remember is that you must match your emotions to your audience's.

The Force of Persuasion

The concept of persuasion, like that of power, often confuses and even mystifies businesspeople. It is so complex—and so dangerous when mishandled—that many would rather just avoid it altogether. But like power, persuasion can be a force for enormous good in an organization. It can pull people together, move ideas forward, galvanize change, and forge constructive solutions.

To do all that, however, people must understand persuasion for what it is—not convincing and selling but learning and negotiating. Furthermore, it must be seen as an art form that requires commitment and practice, especially as today's business contingencies make persuasion more necessary than ever.

Twelve Years of Watching and Listening

The ideas behind this article spring from three streams of research.

For the last 12 years as both an academic and as a consultant, I have been studying 23 senior business leaders who have shown themselves to be effective change agents. Specifically, I have investigated how these individuals use language to motivate their employees, articulate vision and strategy, and mobilize their organizations to adapt to challenging business environments.

Four years ago, I started a second stream of research exploring the capabilities and characteristics of successful cross-functional team leaders. The core of my database comprised interviews with and observations of 18 individuals working in a range of U.S. and Canadian companies. These were not senior leaders as in my earlier studies but low- and middle-level managers.

Along with interviewing the colleagues of these people, I also compared their skills with those of other team leaders—in particular, with the leaders of less successful cross-functional teams engaged in similar initiatives within the same companies. Again, my focus was on language, but I also studied the influence of interpersonal skills.

The similarities in the persuasion skills possessed by both the change-agent leaders and effective team leaders prompted me to explore the academic literature on persuasion and rhetoric, as well as on the art of gospel preaching. Meanwhile, to learn how most managers approach the persuasion process, I observed several dozen managers in company meetings, and I employed simulations in company executive-education programs where groups of managers had to persuade one another on hypothetical business objectives.

Finally, I selected a group of 14 managers known for their outstanding abilities in constructive persuasion. For several months, I interviewed them and their colleagues and observed them in actual work situations.

Four Ways Not to Persuade

In my work with managers as a researcher and as a consultant, I have had the unfortunate opportunity to see executives fail miserably at persuasion. Here are the four most common mistakes people make:

1. They attempt to make their case with an up-front, hard sell. I call this the John Wayne approach. Managers strongly state their position at the outset, and then through a process of persistence, logic, and exuberance, they try to push the idea to a close. In reality, setting out a strong position at the start of a persuasion effort gives potential opponents something to grab onto—and fight against.

It's far better to present your position with the finesse and reserve of a lion tamer, who engages his "partner" by showing him the legs of a chair. In other words, effective persuaders don't begin the process by giving their colleagues a clear target in which to set their jaws.

2. They resist compromise. Too many managers see compromise as surrender, but it is essential to constructive persuasion. Before people buy into a proposal, they want to see that the persuader is flexible enough to respond to their concerns. Compromises can often lead to better, more sustainable shared solutions.

By not compromising, ineffective persuaders unconsciously send the message that they think persuasion is a one-way street. But persuasion is a process of give-and-take. Kathleen Reardon, a professor of organizational behavior at the University of Southern California, points out that a persuader rarely changes another person's behavior or viewpoint without altering his or her own in the process. To persuade meaningfully, we must not only listen to others but also incorporate their perspectives into our own.

3. They think the secret of persuasion lies in presenting great arguments. In persuading people to change their minds, great arguments matter. No doubt about it. But arguments, per se, are only one part of the equation. Other factors matter just as much, such as the persuader's credibility and his or her ability to create a proper, mutually beneficial frame for

a position, connect on the right emotional level with an audience, and communicate through vivid language that makes arguments come alive.

4. They assume persuasion is a one-shot effort. Persuasion is a process, not an event. Rarely, if ever, is it possible to arrive at a shared solution on the first try. More often than not, persuasion involves listening to people, testing a position, developing a new position that reflects input from the group, more testing, incorporating compromises, and then trying again. If this sounds like a slow and difficult process, that's because it is. But the results are worth the effort.

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